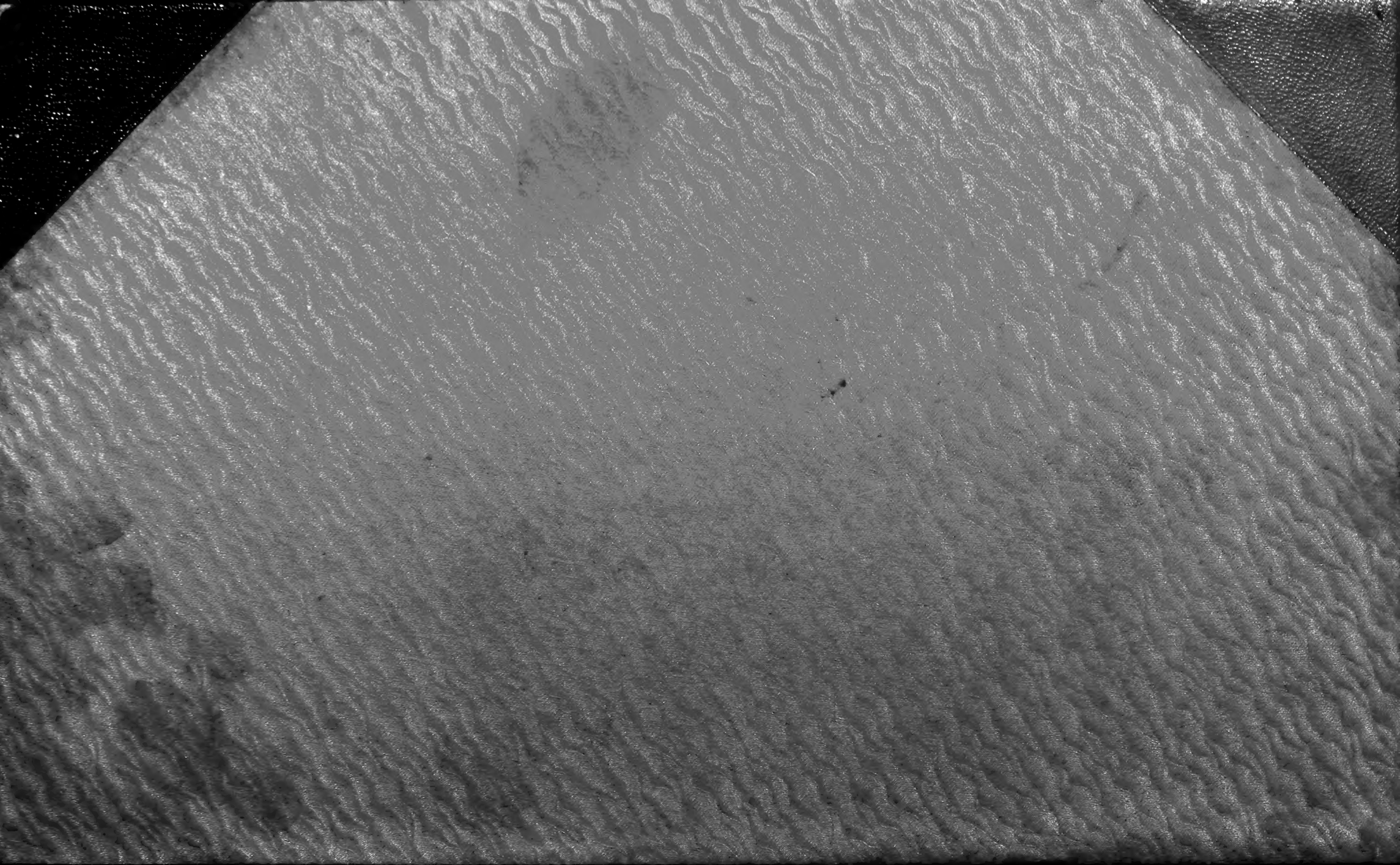

HARVARD BOTANI

At a meeting of the Botanical Department held Oct. 20, 1903, the following vote was passed:

"Under the head of *Harvard Botanical Memoirs* it is proposed to include all quarto publications issuing from the Gray Herbarium, the Cryptogamic Herbarium, and the Botanical Laboratories of Harvard University, including theses presented for the degrees of Ph.D. and S.D. in Botany. Inasmuch as some of the future publications are likely to be continuations of subjects treated in quarto papers already published, it seemed desirable to begin the numbering of the *Memoirs* with the year 1880, the date of the first quarto publication of any member of the botanical staff at present connected with Harvard University."

At a meeting on Nov. 25, 1916, it was voted to discontinue the series of *Botanical Memoirs*. In all, nine numbers have been issued, the titles of which are given below.

I. The Gymnosporangia or Cedar-Apples of the United States. By W. G. Farlow. *Anniversary Memoirs, Boston Soc. Nat. Hist.* 1880. Pp. 38. Pls. 1 and 2.

II. The Entomopthoreae of the United States. By Roland Thaxter. *Mem. Boston Soc. Nat. Hist.*, IV, No. 6. Pp. 133–201. Pls. 14–21. April, 1888.

III. The Flora of the Kurile Islands. By K. Miyabe. *Mem. Boston Soc. Nat. Hist.*, IV, No. 7. Pp. 203–275. Pl. 22. Feb. 1890.

IV. A North American Anthurus: its Structure and Development. By Edward A. Burt. *Mem. Boston Soc. Nat. Hist.*, III, No. 14. Pp. 487–505. Pls. 49 and 50. Oct. 1894.

V. Contribution towards a Monograph of the Laboulbeniaceae. By Roland Thaxter. *Mem. American Acad. of Arts and Sci.* Boston. XII, No. 3. Pp. 189–429. Pls. 1–26. Presented May 8, 1895. Issued Oct. 14, 1896.

VI. The Development, Structure, and Affinities of the Genus Equisetum. By Edward C. Jeffrey. *Mem. Boston Soc. Nat. Hist.*, V, No. 5. Pp. 155–190. Pls. 26–30. April, 1899.

VII. Comparative Anatomy and Phyllogeny of the Coniferales, Part I. The Genus Sequoia. By Edward C. Jeffrey. *Mem. Boston Soc. Nat. Hist.*, V, No. 10. Pp. 441–459. Pls. 68–71. Nov. 1903.

VIII. The Comparative Anatomy and Phyllogeny of the Coniferales, Part II. The Abietineae. By Edward C. Jeffrey. *Mem. Boston Soc. Nat. Hist.*, VI, No. 1. Pp. 1–37. Pls. 1–7. Jan. 1905.

IX. Contributions towards a Monograph of the Laboulbeniaceae, Part II. By Roland Thaxter. *Mem. American Acad. of Arts and Sci.*, XIII, No. 6. Pp. 219–469. Pls. 28–71. June, 1908.

HARVARD BOTANICAL MEMOIRS

Under the head of *Harvard Botanical Memoirs* it is proposed to include all quarto publications issuing from the Gray Herbarium, the Cryptogamic Herbarium, and the Botanical Laboratories of Harvard University, including theses presented for the degrees of Ph.D. and S.D. in Botany. Inasmuch as some of the future publications are likely to be continuations of subjects treated in quarto papers already published, it seemed desirable to begin the numbering of the *Memoirs* with the year 1880, the date of the first quarto publication of any member of the botanical staff at present connected with Harvard University.

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MEMOIRS

OF THE

BOSTON SOCIETY OF NATURAL HISTORY;

VOLUME IV, NUMBER VII.

THE FLORA OF THE KURILE ISLANDS.

By K. MIYABE.

BOSTON:
PUBLISHED BY THE SOCIETY.
FEBRUARY, 1890.

Compliments of Kingo Miyabe,

Sapporo, Japan.

VII. The Flora of the Kurile Islands.

By K. Miyabe.

Introduction.

General Remarks.

So far as I am aware, no special work devoted to the flora of the Kurile Islands has ever been published. The glimpses we could get of its character have chiefly been from the scattered writings of Russian botanists. In his "Flora Rossica," Ledebour attributes about forty species to these islands. Before his time, Pallas,[1] Georgi,[2] Turczaninow,[3] Chamisso and Schlechtendal,[4] De Candolle[5] and Ruprecht,[6] referred occasionally in their writings to the Kurile plants. Most of these plants, however, were included by Ledebour in his "Flora."

Since the appearance of that important work, many additions have been made to our knowledge of the Kurile vegetation by Regel,[7] Maximowicz,[8] Herder,[9] Fr. Schmidt,[10] Siebold,[11] Boott,[12] and others.[13] The total number of plants of these islands known to me from the writings of these authors is 104 species.

The materials on which most of these references were based had been collected by the Russian naturalists and naval officers in the northern Kuriles, as far south as Urup, and are now incorporated chiefly in the herbaria of St. Petersburg. Prof. Maximowicz, who has noted every Kurile plant he has come across in these herbaria since 1868, most generously placed his valuable list in my hands

[1]Pallas, P. S.; Neue Nordische Beiträge, Vol. IV, pp. 112–141. St. Petersburg & Leipzig, 1783. —— Flora Rossica, Tom. I, pars 1, 2. Peteropoli, 1784–1788. —— Species Astragalorum. Lipsiæ, 1800.

[2] Georgi, J. T.; Geographisch-physikalische und naturh. Beschreibung des Russ. Reiches. 3ten Theils 4ter Band, pp. 609–1072. Konigsberg, 1800. —— Nachträge fur dessen Geog., etc., 1802.

[3] Turczaninow, N.; Description de deux nouveaux genres de la familie des Gentianées. —— Observations sur quelques genres et espéces de la familie de Borraginées. ——Decades quatuor plantarum hucusque non descriptarum, Sibiriae maxime orientalis, etc. (Bulletin de la Soc. des Natur. de Mosc., 1840.)

[4] Chamisso, Ad de, and Schlechtendal, D. d.; De plantis in expeditione speculatoria Romanzoffiana observatis. (In Linnæa, III (1828), p. 38, VI (1831), p. 574, on the plants in Herb. Willd.)

[5] In the "Systema" and "Prodromus," based mostly on the specimens in Herb. Fisch.

[6] Ruprecht, F. J.; Distributio Cryptogamarum Vascularium in Imperio Rossico (Beiträge zur Pflanzenkunde des Russ. Reiches. Dritte Lief. St. Petersburg, 1845).

[7] Regel, E.; Uebersicht der Arten der Gattung Thalictrum, welche im russischen Reiche und der Angränzen den Ländern wachsen. Moskau, 1861.——Regel & Tiling, H.; Florula Ajanensis. Mosquae, 1859. —— Regel; Plantae Raddeanae, Vol. I, 1861–2.

[8] Maximowicz, C. J.; Primitiae Florae Amurensis. St. Petersb., 1859. —— Diagnoses plantarum novarum Japoneae et Mandshuriae (Mélanges biologiques tirés du Bull. de l'Acad. imp. des Sciences de St. Pétersbourg, Tom. VIII, IX, 1872–1876). —— Diagnoses plantarum novarum Asiaticarum (Mél. biol., IX–XII, 1876–1888). —— Rhododendreae Asiae Orientalis (Mém. de l'Acad. imp. St. Pétersb., 7e sér., t. XVI, n. 9) 1870. —— Adnotationes de Spiræaceis (Acta H. Petrop. Tom. VI) 1879.

[9] Herder, F. von; Plantae Raddeanae, Vol. III, IV, 1864–1887.

[10] Schmidt, Fr.; Flora Sachalinensis, in Reisen im Amurlande und auf der Insel Sachalin (Mém. Acad. imp. St. Pétersb., 7e Sér., t. XII, n. 2) 1868.

[11] Siebold et Zuccarini; Flora Japonica. Lugd. Bot. 1835–1870.

[12] Boott, F.; Illustrations of the Genus Carex. 4 vols. 1858–1867.

[13] Many references to the Kurile plants are found in some of the recent monographs, as Haussknecht on Epilobium, Elwes on Lilium, Bunge on Oxytropis, Masters on Japanese Conifers, etc. In Turczaninow's Flora Baicalensis-Dahurica, about half a dozen references occur.

with full consent that it should be published with my own. The list contains one hundred and nine species, of which thirty-eight have not yet been recorded as growing in these islands, in any publications with which I am acquainted.

The first naturalists who visited the Kurile Islands were G. W. Steller and S. P. Krascheninnikof. They crossed over from Kamtschatka about 1740, either together or separately, and collected in the islands of Shumshu and Paramushir.[1] Of their botanical collections, the larger part was worked over and published by Pallas. Some of their sea-weed collections are mentioned in S. T. Gmelin's Historia Fucorum.[2]

In 1788, Merk, a doctor in Irkutsk, who accompanied, as naturalist, the expedition to the Northern Pacific under Comm. Billings, made collections in some of the northern Kuriles. Of his collections, a part is still preserved in the Fischer Herbarium, and also in the Willdenow Herbarium. They were made known chiefly by the labors of Pallas and Rudolph. The results of the study of the latter were published in the writings of Georgi.[3]

Langsdorff under Krusenstern (1803–1806), and Chamisso under Kotzebue (1815–1818) seem also to have made brief visits to some of the northern Kuriles during their cruise in the N. Pacific.[4]

Most of the later collectors were officers of the Russian surveying ships. In 1833, Baron Wrangell visited Urup and made some collections of its plants. These specimens are now in the Herbarium of the Academy in St. Petersburg. The only collector who made a prolonged tour among these islands, collecting plants on Shumshu, Paramushir and Urup, was Vosnesenski, the late curator of the Zoological Museum of the Academy, in 1844.[5]

Orloff, a Russian naval officer, who is better known as a collector in the northeastern part of Manchuria, 1849–1850, collected also in the Kuriles.[6]

It must be borne in mind that, on account of strong currents, dense fogs and want of harbors (especially in the northern Kuriles), navigation among these islands is rendered very dangerous, and landing on their shores almost impossible, unless favored with unusually calm weather. Therefore the visits of these collectors were generally limited to a few hours, or, at most, to a day, at one place. Under such unfavorable physical conditions, it is not surprising that in spite of the zeal of many of the collectors who have visited these uninviting shores, we have after all comparatively little knowledge of the vegetation of these islands.

In the summer of 1884, while I was travelling on the northeastern coast of Yezo, an unexpected opportunity for visiting some of the southern Kuriles was offered me. When I reached the harbor of Nemuro on the 27th of July, I found a small steamer on the point of starting for Shikotan, Etorofu, and Urup. With scarcely any time for necessary preparation, I went on board the *Kyorin-maru* accompanied by Mr. N. Kindaichi, the head-gardener of the Botanic Garden of Sapporo Agricultural College, who greatly assisted me in collecting plants during the whole trip. About noon of the next day we were at the Shakotan harbor on the northern coast of the island of Shikotan. In this place we collected most assiduously for two hours and a half. The next day, a little before noon, we reached a small fishing cove on the northern coast of Etorofu, called Furubetsu. From that place we started at once on foot for Shana, another fishing station situated on the same side of the coast about twenty miles distant, and the best harbor of the whole island. The country which we passed through during

[1]Krascheninnikof, S. P.; The History of Kamtschatka and the Kurilski Islands (original in Russian, 1754–1755). English transl. by James Grieve, p. 37. Gloucester, 1764. —— Pallas; Flora Rossica, p. III (Introduction).

[2]Bongard, M. H. G.; Historical Sketch of the Progress of Botany in Russia. (Hooker's Companion to the Botanical Magazine, Vol. I, p. 177; 1835).

[3]Sauer, M.; An Account of a Geographical and Astronomical Expedition to the Northern parts of Russia, etc., under Comm. J. Billings, in 1785–1794. London, 1802. ——Linnæa, VI, p. 574.——Georgi, Beschr. Russ. Reiches, III, 4, p. 619.

[4]Regel, Pl. Radd. p. 242. —— Prof. Maximowicz informs me that Chamisso visited these islands.

[5]These facts I owe to Prof. Maximowicz.

[6]Herder, F. von; Biographische Notizen über einige in den Plantæ Raddeanæ genannte Sammler und Autoren. (Engler, Bot. Jahrbücher, IX (1887) p. 443. —— Plantæ Radd. IV, 1, p. 232.

this short inland trip is of the most diversified character, ranging from sheltered valleys thickly covered with deciduous trees and bamboos to exposed mountain-tops entirely clothed with the straggling *Pinus pumila*, and from sandy and rocky beaches to sphagnous bogs on marine terraces. Thus I was able to observe and collect more than two hundred species of the phanerogams and vascular cryptogams of this island, which, I believe, would fairly represent the general flora of the southern Kuriles.

On the 31st, the steamer took us from Shana to Shibetoro, a fishing station near the northern extremity of the same island. There we had only an hour and a half at our disposal to spend on its hillsides. So far the weather had been uncommonly fine and calm. But the regular Kurile weather soon set in, preventing our landing on the island of Urup.

The number of species that I collected and observed[1] in the island of Etorofu is 202; and in Shikotan, 86. All my Kurile specimens are now preserved in the Herbarium of Sapporo Agricultural College, Japan. What duplicates I had of them I have distributed, together with those of my Yezo collections, to the herbaria of the Imperial University of Tokyo, of the Botanic Garden of St. Petersburg, and of Harvard University.

The first list of my Kurile collections was made soon after my return to Sapporo from that trip in 1884. It was sent to my friend, Prof. J. Matsumura of the Imperial University of Tokyo, who read it for me before the November meeting of the Botanical Society of the same year. By the courtesy of Professor R. Yatabe, I was allowed to spend about five months, in 1885, in his laboratory in the University of Tokyo, working up my Kurile and Yezo collections. Some important corrections were there made in my former list.

But it was not until I came to Harvard University that the idea of publishing this list in the present shape was formed. I am indebted to the late Dr. Asa Gray for first suggesting the publication of such a list, which, in his opinion, would be equally interesting to American and to Japanese botanists.

This work I was able to begin in earnest during the summer of 1888 in the Gray Herbarium, where, by the kindness of Dr. Sereno Watson, I was allowed the use of its extensive collections and library. For this particular work there could be few places better suited than this Herbarium, which is especially rich in specimens from the western and northwestern portions of North America, and the islands in the Behring Sea. The vegetation of eastern and northeastern Asia is also very largely represented by the valuable collections of Charles Wright, Williams and Morrow, J. Small, Maximowicz, Albrecht, Schmidt, Oldham, Tschonoski, Wilfold, Augustinowicz, Maries, Stewart and others.

Under each species I have given the range of its geographical distribution, special attention being paid to its limits in the adjoining countries. For this purpose I have availed myself largely of the labors of Ledebour, Maximowicz, Regel, Herder, Hooker, Gray, Watson, Forbes, Hemsley, Franchet, and many others. As to its range in the rest of Japan, my report is based mainly on the collections in the Imperial University of Tokyo, and also on my own, which especially relates to the island of Yezo.

The citation of the literature under the species is not designed to be complete. As a general rule, I have always referred to some of the principal Floras of the neighboring countries, and also to one or more works of a general character, in which can be found a description of the species. A work in which any reference to the Kurile plant as such is made is usually cited under that species. In the case of a critical species, fuller references to its literature and synonymy are given.

During the preparation of this paper, I have been greatly indebted to Dr. Sereno Watson, whose judgment I have freely sought, and on whose suggestions I have acted, on many points of doubtful and critical character. I owe much also to Prof. G. L. Goodale, who has kindly suggested many valuable changes. To Prof. C. J. Maximowicz I am under very great obligations. To his generosity

[1] Want of space in my press-papers obliged me toward the end of the trip to resort to simply noting down on the spot the occurrence of plants of whose names I was absolutely certain.

and kindness this paper largely owes any claim it may have to completeness. Prof. W. Trelease kindly supplied me with information relating to the species of Epilobium; and Mr. James Bisset, F. L. S., in regard to a certain plant collected by Prof. J. Milne on the northern Kuriles.

Physical Geography of the Islands.

The Kurile Islands, or *Chishima* (Thousand Isles), as they are called in Japan, comprise about twenty-four principal islands, with several smaller ones scattered around them, extending in a regular chain, about 795 miles long, from the southern point of Kamtschatka to the island of Yezo. They form the boundary between the Sea of Okhotsk and the Northern Pacific, which attains just south of this group the enormous depth of 27,930 feet.

Until 1875, the islands lying north of Vries or Etorofu Strait belonged to Russia; but by the treaty of that year the whole of the Kurile Islands were placed under the rule of the Japanese Empire. The name Hokkaido — the North Sea district — is now applied to the Kuriles, Yezo, and its adjacent smaller islands collectively.

Beginning at the north, the islands which are habitable[1] are Shumshu, Paramushir, Shiashkotan, Matua, Rashua, Urup, Etorofu or Iturup, Kunashiri and Shikotan. The rest of the islands, chiefly on account of their barrenness and lack of good drinking water, have been left uninhabited. They are visited for game by the inhabitants of the neighboring islands only in times of perfect calm during summer.

Speaking in a general way, the islands are precipitous and unapproachable on the southern side. The few coves and bays which they possess are situated on the northwestern or northeastern sides. These do not serve, however, as safe places of shelter for ships when the wind is unfavorable.

The whole chain of islands is washed by the strong cold currents which come down from the northern part of the Sea of Okhotsk, and also from the Behring Sea. Between the islands there are strong currents, varying in strength from time to time according to the force of the tidal swell from the Pacific. These cold currents, after quitting the Kurile Islands, descend along the eastern and southern coast of Yezo, forming a stream known in Japan as the *Oyashiwo*. At times it comes even as far south as Kinkwazan and Inuboye in the main island of Japan.

Quite close to the east of this cold current, a branch of the Kuroshiwo or Black Stream runs northeastward to the Behring Sea. According to Blakiston (Japan in Yezo, p. 22), these two opposing currents approach within fifteen miles of each other at Cape Erimo, Yezo, with the difference of temperature of 15° F. Whenever the easterly or southerly wind blows over the region, the whole chain of islands is enveloped in the densest fog. This continues usually for a long time, and is said to surpass even that of the far-famed coasts of Newfoundland.

There is another branch of the Kuroshiwo, which enters the Sea of Okhotsk through the Strait of La Pérouse, after washing the whole western coast of Japan. Its trace is lost as it approaches the northern coasts of Kunashiri and Etorofu. The effect of this warm current on the climate and vegetation of these two southern islands can hardly be overestimated.

From November till April or May, all the islands are locked up in ice. Even in the month of June navigation in these seas is sometimes made dangerous by the sudden appearance of drifting ice from the north. As to the temperature of these islands, we have no observations for any length of time, or that are of any value. That there exist great differences in the temperature between the northern and southern islands is evident even from the difference in their latitude (about 8°), and from the influence of the different ocean currents. According to the records of the navigators who

[1] Pallas; Neue Beschreibung der Kurilischen Inseln. (Neue Nordische Beiträge, IV, p. 112–141, 1783.)

have cruised among them, all the islands lying north of Urup are perpetually capped with snow. Their vegetation also indicates decidedly their sub-arctic character.

According to Prof. J. Milne,[1] who has visited the Kurile islands twice since 1878, the whole chain is of volcanic origin. By him and by Captain Snow, fifty-two well-defined volcanic cones were recognized, of which seventeen were active. All these active volcanoes, with the exception of one or two, are confined to the northern Kuriles, where even those which are apparently extinct still preserve their symmetrical slopes, indicating that they have suffered but little from denudation since they were first built up. Professor Milne failed to discover any trace of stratified rocks in the northern group. From these observations he concludes that the formation of the northern Kuriles must be comparatively recent; and, in fact, some of them are now actively forming.

On the other hand, the volcanoes of Kunashiri and Etorofu are mostly rounded in shape and deeply cut by valleys. The neighboring island of Urup presents appearances similar to these two. Along the coasts of these islands, Professor Milne noticed the existence of stratified rocks and terrace formation. These facts show that they are older than the other members of the Kurile group, and formed "the first of a series of stepping stones, which connects Japan, by means of Kamtschatka, with the remainder of Asia." Accepting Croll's theory as true, the presence of marine terraces in the southern Kuriles forms good evidence of their existence before the Glacial Epoch.

Character of the Kurile Flora and its Relations to the Flora of the Neighboring Countries.

According to our present knowledge, the number of orders, genera and species in the Kurile flora, under each of the greater divisions of the vegetable kingdom, is as follows:—

	Orders.	Genera.	Species.
Polypetalæ.	21	69	121
Gamopetalæ.	14	58	100
Monochlamydeæ.	6	12	19
Dicotyledons.	41	139	240
Monocotyledons.	7	33	53
Angiospermæ.	48	172	293
Gymnospermæ.	1	5	6
Phanerogamæ.	49	177	299
Cryptogamæ (Vascul.)	4	10	18
Total.	53	187	317

Among the orders, those which are comparatively rich in genera and species stand in the following sequence:—

Compositæ,	with 15 genera.	Compositæ,	with 30 species.
Rosaceæ,	" 12 "	Rosaceæ,	" 23 "
Liliaceæ,	" 12 "	Gramineæ,	" 17 "
Gramineæ,	" 11 "	Ericaceæ,	" 16 "
Ranunculaceæ,	" 8 "	Caryophyllaceæ,	" 15 "
Ericaceæ,	" 8 "	Liliaceæ,	" 15 "
Cruciferæ,	" 7 "	Scrophulariaceæ,	" 14 "
Umbelliferæ,	" 7 "	Ranunculaceæ,	" 13 "

[1] Milne, J.; A cruise among the volcanoes of the Kurile Islands (Geological Magazine, 1879, p. 337). —— The Kurile Islands (Geol. Mag., 1880, p. 91). —— Evidences of the Glacial Period in Japan (Trans. Asiatic Soc. of Japan, 1881, p. 53). —— Notes on the Kurile Islands, which appeared in the Japan Gazette in the spring of 1885 (not seen; extracts from it in Nature, 1885, pp. 135 and 209).

Leguminosæ,	with	6	genera.
Saxifragaceæ,	"	6	"
Scrophulariaceæ,	"	6	"
Filices,	"	6	"
Caryophyllaceæ,	"	5	"
Caprifoliaceæ,	"	5	"
Coniferæ,	"	5	"
Primulaceæ,	"	4	"
Gentianaceæ,	"	4	"
Labiatæ,	"	4	"
Orchidaceæ,	"	4	"

Cruciferæ,	with	12	species.
Leguminosæ,	"	9	"
Saxifragaceæ,	"	9	"
Cyperaceæ,	"	8	"
Umbelliferæ,	"	7	"
Caprifoliaceæ,	"	7	"
Borraginaceæ,	"	7	"
Filices,	"	7	"
Onagraceæ,	"	6	"
Gentianaceæ,	"	6	"
Polygonaceæ,	"	6	"
Coniferæ,	"	6	"
Orchidaceæ,	"	6	"

There are 21 orders which are represented by a single genus; and 9, by a single species.

Among the larger genera, the following are conspicuous: *Carex* (with 8 species); *Stellaria* (with 7); *Artemisia* (6); *Epilobium*, *Senecio*, *Vaccinium*, *Mertensia*, *Veronica* and *Pedicularis* (5 each); *Arabis*, *Viola*, *Prunus*, *Potentilla*, *Saxifraga*, *Achillea*, *Pyrola*, *Polygonum*, *Poa*, *Lycopodium* and *Equisetum* (4 each).

The relative size of these principal orders and genera indicates distinctly the northern nature of the flora. To bring out more clearly a certain peculiarity of the Kurile vegetation, a comparative table, placed below, has been constructed, giving in the first column the names of orders; in the second, the relative percentage which they bear to the whole Kurile flora; and in the third, to that of the flora of Yezo; in the fourth, to that of Saghalin; in the fifth, to that of Amur-land; and in the last column to that of eastern Siberia. The figures in the third column are based on my unpublished list of the Yezo plants, containing a little over 1,100 species. The fourth column I have based entirely on the Flora Sachalinensis of F. Schmidt. The last two columns were taken from Maximowicz's Primitiæ Floræ Amurensis, p. 430.

	Kurile Islands.	Yezo.	Saghalin.	Amur-land.	E. Siberia.
Compositæ.	9.5	7.2	9.1	11.7	9.8
Rosaceæ.	7.3	5.3	5.1	4.9	5.8
Gramineæ.	5.4	4.8	6.8	6·3	4.9
Ericaceæ.	5.0	3.8	4.0		
Liliaceæ.	4.7	4.9	4.0	4.5	3.5 (?)
Caryophyllaceæ.	4.7	2.1	2.2	3.2	5.1
Scrophulariaceæ.	4.4	2.5	2.2	2.4	2.3
Ranunculaceæ.	4.1	3.6	5.0	7.2	8.2
Cruciferæ.	3.7	2.1	3.2	3.5	6.4
Leguminosæ.	2.8	2.3	1.0	3.0	5.3
Saxifragaceæ.	2.8	2.3	2.2		
Cyperaceæ.	2.5	5.1	7.3	4.9	5.6
Umbelliferæ.	2.2	2.6	3.4	2.9	1.7
Caprifoliaceæ.	2.2	1.5	1.8	1.2	1.1
Borraginaceæ.	2.2	.8	.3	1.1	1.1
Filices.	2.2	3.8	3 2	2.3	
Polygonaceæ.	1.8	2.7	2.7	2.8	
Orchidaceæ.	1.8	3.0	3.5	1.5	1.3
Onagraceæ.	1.8	1.0	.8	1.1	0.5

	Kurile Islands.	Yezo.	Saghalin.	Amur-land.	E. Siberia.
Gentianaceæ.	1.8	1.0	.7	1.2	1.9
Coniferæ.	1.8	1.5	1.4		
Labiatæ.	1.2	3.2	1.7	2.9	

From this table it is clear that in Rosaceæ, Ericaceæ, Caryophyllaceæ, Scrophulariaceæ, Caprifoliaceæ and Borraginaceæ the Kurile flora is relatively rich; while in Cyperaceæ (?), Labiatæ and Polygonaceæ it is comparatively poor.

Every order which is represented in the Kurile Islands is also represented in a greater or less degree throughout the northern hemisphere, many passing into the southern.

As to the genera, one hundred and fifty-six or about eighty-four per cent of the total number are amphigæan, that is they are found throughout Europe, Northern Asia and North America. Of the remaining 31 genera, only three, *Skimmia*, *Crawfurdia* and *Acanthopanax*, are restricted to eastern and tropical Asia. Twelve genera may be called Europo-Asiatic, of which *Hemerocallis*, *Adenophora*, *Pleurospermum*, *Ægopodium*, *Filipendula* and *Sorbaria* are so in a strict sense; while *Sonchus* and *Asperula* are found also in Africa and Australia; and *Dianthus*, *Swertia*, *Alopecurus* and *Galeopsis?* extend to northwestern America. The remaining sixteen genera are more or less confined to Asia and North America. We have only four genera in the Kurile Islands which are peculiar to eastern North America and to eastern Asia. They are *Leucothoe*, *Diervilla*, *Hydrangea* and *Astilbe*. The American genera, *Trillium*, *Disporum* and *Clintonia*, are found also in the temperate and mountain regions of Asia; *Aralia*, in eastern and tropical Asia; *Dodecatheon* and *Claytonia*, in northeastern Asia; and *Mimulus*, in extratropical Asia, Africa and Australia. *Tetrapoma* of northeastern Asia is said to occur also in northwestern America. *Boschniakia*, which is peculiar to the north Pacific borders, recurs in North America in Mexico, and in Asia in Himalaya.

As to the species, ninety-seven or about thirty per cent of the Kurile vegetation are distributed throughout Europe, northern Asia and North America. For the northerly situation of the islands, the proportion of the circumpolar species is comparatively small. We shall leave them entirely out of our consideration while we are discussing in the following pages the character and relative proportions of the different elements which constitute the remaining important part of the Kurile flora.

There are only two endemic species, and these of a rather doubtful character: *Draba hirsuta*, Turcz., and *Oxytropis Pumilio*, Ledeb. Both of them were founded on a few imperfect specimens and will most likely prove to be forms of some of the nearly related species, in which these regions are particularly rich. *Prunus Ceraseidos*, Max., var. *kurilensis*, may prove to be a good species. Its relation to the typical form I have dwelt upon at length in its proper place.

Seventeen species and two varieties are restricted to the insular limits of Japan and Saghalin; of these, two species and one variety are peculiar to Hokkaido.

The largest and most important element is the *Northeastern Asiatic*, whose centre of distribution is to be found somewhere around the Sea of Okhotsk. It numbers 31 species and 6 varieties. The next largest is what I have designated, for convenience, the *Eastern Asiatic*, which includes plants of Japan, Saghalin, Manchuria, Corea and China, but not of Kamtschatka and eastern Siberia. This eastern Asiatic element includes 28 species and 3 varieties. Altogether, the species and varieties which are strictly Asiatic in their range of distribution, number 105 and 12 respectively.

Of the species which extend into Europe, there are 55; and into North America, 80. Of these 80 species, 34 are limited to northwestern America, which includes Alaska and British Columbia; while 22 extend further southward on the Rocky Mountains and other high ranges in the Pacific States. The remaining 24 species are all widely distributed across that continent, chiefly in its cool temperate region. In the Kuriles we have no species which are limited to the Atlantic States in North America.

To give a better idea of the relative importance of these elements in the Kurile flora, the following table will show their proportions in terms of per cent., the varieties being taken as units, and the circumpolar species entirely discarded:—

Insular,	9.4		
N. E. Asiatic,	16.0		
N. + N. E. Asiatic,	3.4		
E. + N. E. Asiatic,	4.6		
E. Asiatic,	13.3		
N. + E. Asiatic,	2.1		
Himal. + E. Asiatic,	1.2		
Asiatic,			50.0
Eur. + E. Asia,	11.1		
Eur. + N. E. Asia,	4.3		
Europ.-Asiatic,			15.4
Europ.-Asia + N. W. Am.,	5.2		
Europ.-Asia + W. Am.,	3.4		
Intermediate,			8.6
W. Am. + E. Asia,	2.1		
W. Am. + N. E. Asia,	3.8		
N. W. Am. + E. Asia,	2.1		
N. W. Am. + N. E. Asia,	7.7		
N. Pacific,		15.7	
Am. (E.-W.) + N. E. Asia,	3.4		
Am. (E.-W.) + E. Asia,	6.9		
American,		10.3	
Amer.-Asiatic,			26.0

The table shows at once the great preponderance of the Asiatic species, the greater portion of which are restricted to the eastern and northeastern parts of Asia. Next in importance come the Americo-Asiatic, which divide themselves into two distinct groups: the American and north Pacific. The latter constitutes, by far, the more prominent part. It contains many interesting species, such as *Fritillaria kamtschatcensis*, *Boschniakia glabra*, *Rhododendron chrysanthum* and *kamtschaticum*, *Viola Langsdorffii*, *Claytonia sarmentosa*, *Lupinus Nootkatensis*, *Epilobium Behringianum* and *E. Bongardi*, *Primula cuneifolia*, *Gentiana auriculata*, *Cassiope lycopodioides*, *Erigeron salsuginosus*, *Lysichiton kamtschaticum*, *Saxifraga reflexa*, etc. The Europeo-Asiatic elements are also liberally represented. If the species which extend into northwestern America are included, they form about twenty-four per cent of the whole.

In the Kurile flora we have no additions of orders to make to the rich flora of Japan. As to the genera, there are six new additions, namely, *Parrya*, *Tetrapoma*, *Claytonia*, *Lupinus*, *Armeria* and *Dodecatheon*. These genera are found only in the northern Kuriles. None of them occur in the island of Saghalin.

As to the species, 54 are entirely new to Japan; and 12 species are represented under different varieties chiefly in the alpine regions of the main island. Of these, 13 are circumpolar species; 2 species and 1 variety are endemic (?); 5 species are Europeo-Asiatic, three of which extend into northwestern America; 6 are northern Asiatic; 17, northeastern Asiatic; 18, northern Pacific, and 4, American. With the exception of *Prunus Ceraseidos*, var. *kurilensis*, *Saxifraga bronchialis*, *Artemisia laciniata*, *Artemisia sericea*, *Carex macilenta* and *Carex vaginata*, the remaining 60 plants have thus far been found only in the islands lying northward of Urup! These facts clearly indicate that the vegetation of the southern Kuriles is very much like that of Japan (northern), while tha

of the northern approaches remarkably the flora of the Behring Sea region (northeastern Asiatic and northern Pacific).

In the southern Kuriles, for instance, we have such plants as the following, which show a strong affinity to the vegetation of the warmer climate:— *Ranunculus japonicus*, *Viola verecunda*, *Dianthus superbus*, *Hypericum erectum*, *Skimmia japonica*, *Ilex crenata*, *Evonymus alata*, *Rhus trichocarpa*, *Rhus Toxicodendron*, *Hydrangea scandens*, *Aralia racemosa*, var., *Acanthopanax ricinifolia*, *Leucothoë Grayana*, *Crawfurdia japonica* and *Bambusa kurilensis*.

Compared with the flora of Saghalin, we find a close resemblance between them in the vegetation of their respective southern portions. Both enjoy about the same climate and are under the same influences as the Japanese flora. Toward the north their contrast is striking, from the obvious reason of their proximity to different floral regions.

There are forty-three species in the Kurile flora which have not yet been found in Saghalin, but which are known to occur in Japan. Of these, seventeen plants grow also in Kamtschatka and adjacent districts. However small in number, consideration of these plants would be of some help to explain how far this chain of volcanic islands has been the means of introducing northern Asiatic plants into Japan. These seventeen species are as follows:—

Clematis fusca.
Barbarea vulgaris.
Stellaria florida.
Stellaria ruscifolia.
Trifolium Lupinaster.
Saxifraga Merkii.
Erigeron salsuginosus.
Cassiope lycopodioides.
Bryanthus taxifolius.
Primula cuneifolia.
Severtia tetrapetala.
Veronica Stelleri.
Pedicularis Chamissonis.
Polygonum viviparum.
Rumex Acetosa.
Microstylis monophyllos.
Equisetum limosum.

Some of these plants are of such wide distribution in the northern hemisphere that it is not fair to include them in our consideration of this question. Such plants as *Barbarea vulgaris*, *Trifolium Lupinaster*, *Bryanthus taxifolius*, *Polygonum viviparum*, *Rumex Acetosa*, *Microstylis monophyllos*, and *Equisetum limosum*, we may expect any time from Saghalin, as they are very common in all the surrounding countries. To the same category, I may add *Clematis fusca*. This reduces our list about one-half.

Stellaria florida, *Saxifraga Merkii*, and *Pedicularis Chamissonis* exist in Japan only as varieties in its alpine regions. This indicates that these plants were introduced into Japan a long time ago. The typical forms of *St. florida* and *Sax. Merkii* are now distributed in the northeastern part of Asia, extending from the Baikal district to Kamtschatka; and *Ped. Chamissonis* is found in Alaska, the Aleutian Islands and Kamtschatka. Their presence in the northern Kuriles in the present day does not necessarily prove that the species were introduced into Japan through this channel. It may simply indicate that they have been introduced here in recent times from Kamtschatka. The nature of the geology and general vegetation of these islands supports the latter view. According to Professor Milne, as I have stated before, all the northern Kuriles are of very recent formation, and "at the time when Japan was colonized, these stepping stones were probably without existence."

The scanty vegetation which we find in these northern islands is mostly composed of plants growing in Kamtschatka and the Aleutian Islands. The greater part of them are not yet known to come down to the southern Kuriles. A few plants, which are decidedly characteristic of northern Japan and the southern Kuriles, have also been found in some of the smaller islands north of Urup. *Petasites japonica*, for instance, is said to extend as far north as the island of Matua, and *Bambusa kurilensis* and *Taxus cuspidata*, to Ketoy. Thus it seems that these northern Kuriles are now in the stage of receiving their vegetation from both Kamtschatka and the southern Kuriles. Doubtless

many of these Kamtschatkan plants will in the future reach the northern shores of Japan, probably through the agency of currents and migratory birds. Of such, *Stellaria ruscifolia*, *Swertia tetrapetala*, and *Erigeron salsuginosus* (?), from their restricted range of distribution in the northeastern and eastern coasts of Yezo, would form good examples.

From these observations, I agree with Professor Milne in the opinion that at the time of the last great southerly migration of the rich polar flora, Japan received her portion mostly through the island of Saghalin, and but little, if any, through the then uncompleted chain of the Kurile Islands.

DICOTYLEDONES.

POLYPETALÆ.

RANUNCULACEÆ.

1. Clematis fusca, Turcz. in Bull. de la Soc. des Natur. de Mosc. (1840), p. 60; Ledeb. Fl. Ross. I, p. 725; Max. Mél. Biol. IX, p. 587; Fr. & Sav. Enum. II, p. 262.

Habitat. Northern *Kuriles!* (Turcz.).[1]

The plant is strictly northeastern Asiatic in its distribution. It grows in swampy places throughout eastern Siberia bordering the Ochotsk Sea, descending southward on the continental side as far as southern Manchuria; while on the insular side it was found to come south as far as the vicinity of Hakodate in Yezo. The plant has not yet been recorded from Saghalin.

According to Franchet & Savatier, the plants found growing around Hakodate belong to the var. *mandshurica*, Regel (Fl. Uss. p. 2, t. 2, f. 1). The plants which I have collected at Tokoro in the province of Kitami, and also at Horomui near Sapporo, have characters more nearly approaching that variety than any of the others established by Regel. But they differ in some points, which are easily noticeable. In the Yezo plants the flowers are also on both the terminal and axillary peduncles, and are provided with two opposite bracts; but they are always solitary, and the bracts, which are broadly ovate, obtuse, and often 2–3 lobed, are placed on the peduncle a little above the middle.

2. Clematis alpina, Miller; DC. Prod. I, p. 10. *Atragene alpina*, L.; Max. Mél. Biol. IX, p. 603; Turcz. Fl. Baic.-Dahur. I, p. 25. *Atr. alpina*, L., var. *ochotensis*, Reg. & Til. Fl. Ajan. p. 20. *Atr. platysepala*, Trautv. & Mey. Fl. Ochot. p. 5.

Hab. Kurile Islands (*ex* Turcz.). *Etorofu*, in shady woods near Furubetsu.

This extremely variable species is widely distributed in Europe, northern Asia and Japan; and also in the Rocky Mountain region of North America. The Japanese plants, especially those which grow in the cold shady woods of Yezo and the Kuriles, correspond exactly to those collected in eastern Siberia and Kamtschatka, described as var. *ochotensis* by Regel and Tiling.

The American form (*C. alpina*, var. *occidentalis*, A. Gray, in Powell's Geol. of Black Hills of Dakota, p. 531) can scarcely be distinguished from some of the Old World plants, except, perhaps, as has been pointed out by Dr. Gray, by a greater tendency of its petals to staminody,— a character which is very poorly developed in the European plant, but which is seen more and more marked in the plants growing eastward.

[1] The mark ! placed after a locality of a plant which was not collected by myself, indicates that the original specimen of the plant thus referred to has been seen by Prof. C. J. Maximowicz in the Herbaria of St. Petersburg.

3. **Thalictrum aquilegifolium**, L. Sp. p. 547; Ledeb. Fl. Ross. I, p. 65; Regel, Thalic. p. 10; Lecoyer, Monog. Thalic. p. 75; Fr. & Sav. Enum. I, p. 3.

Hab. *Kurile Islands* (*fide* Regel).

Distribution. Europe, middle and northern Asia, eastward to Kamtschatka, Saghalin and Japan.

4. **Thalictrum minus**, L. Sp. p. 546; Lecoyer, Monogr. Thalic. p. 124, t. v, f. 2–4.

Var. **elatum**, Lecoyer, *l. c.* p. 127. *Th. Kemense*, Fr. Fl. Halland, II, p. 94; Ledeb. Fl. Ross. I, p. 13; Regel, Thalic. p. 36. *Th. elatum*, Murr. in Trautv. & Mey. Fl. Ochot. p. 6. *Th. Kemense*, Fr., var. *stipellatum*, C. A. Mey. in Max. Prim. Fl. Amur. p. 16. *Th. hypoleucum*, Sieb. & Zucc. Fam. Nat. n. 306. *Th. minus*, L., var. *Kemense*, Trelease, Proc. Bost. Soc. N. H. XXIII, p. 300.

Hab. *Kurile Islands* (*fide* Regel). *Etorofu*, at Shana and Shibetoro.

This variety is also found throughout Japan, but is especially common towards the north, where it attains its greatest size in fertile valleys.

Var. **nanum**, Lecoyer *l. c.* p. 127. *Th. minus*, var. *fœtidum*, Hook. f. & Thoms. in Hook. Fl. Brit. Ind. I, p. 14.

Hab. *Shikotan*, on exposed hillsides facing the harbor.

Our plant is about a foot and a half in height with a stem bent in a somewhat zigzag way. Its leaflets are very small, $\frac{1}{3}$-$\frac{1}{2}$ inch in length, and glandular-pubescent beneath. The present variety is very much rarer in Japan than the above, growing mostly in the alpine districts. It is not yet known from Saghalin, Kamtschatka and Eastern Siberia.

The species is very widely distributed in Europe, Africa, Asia and Alaska.

5. **Anemone parviflora**, Michx. Fl. Bor.-Am. I, p. 319; Ledeb. Fl. Ross. I, p. 16; Schlecht. in Linnæa VI, p. 574.

Hab. *Kurile Islands* (Merk. *ex* Schlecht.).

Distrib. Arctic and northern temperate regions of North America from Labrador to Alaska, descending in the Rocky Mountains to Colorado; Aleutian Islands, Kamtschatka and Kurile Islands.

6. **Anemone debilis**, Fisch.; Turcz. in Bull.-Mosc. XXVII, p. 274; Max. Mél. Biol. IX, p. 607; Fr. & Sav. Enum. II, p. 265. *A. ranunculoides*, var. *gracilis*, Schlecht. in Linnæa VI, p. 574. *A. cærulea*, var. *gracilis*, Ledeb. Fl. Ross. I, p. 14. *A. gracilis*, F. Schmidt Fl. Sach. p. 102.

Hab. *Etorofu*, at Furubetsu.

Distrib. Japan, Saghalin, northeastern Manchuria and Kamtschatka.

The plants which are found throughout northern Japan correspond exactly to the typical specimens from Kamtschatka and Saghalin. Those which were collected by Maximowicz in southern Japan, and which he considers as a variety of this species, have the leaves somewhat resembling those of *Anemone umbrosa*, though considerably smaller.

There are a few specimens in the Gray Herbarium labelled *A. umbrosa*, which were collected by W. P. Blake in "N. Japan." A similar specimen was collected in the vicinity of Sapporo. They have certainly a striking resemblance to the Ussuri specimen of *A. umbrosa* in the shape and proportion of the leaves and flowers, and in the nature of the

pubescence. The only points of difference between them, which I can find in the few specimens before me, are that the sepals are perfectly smooth on both sides in the Japanese plant, and that the peduncles are shorter than the leaves. The ovaries are still too young to show decidedly whether they are sessile or stipitate. They are covered with silvery appressed hairs; and the styles are elongated, cylindrical, smooth and erect. Doubtless the plant is much more closely related to *A. umbrosa* than to any other species. The character of its ripened carpels would settle the point, whether it is to be considered as a variety of that species or as distinct.

7. **Anemone narcissiflora**, L. Sp. p. 542; Ledeb. Fl. Ross. I, p. 18.—Var. **villosissima**, DC. Prodr. I, p. 22; Regel, Pl. Radd. I, p. 18; F. Schm. Fl. Sach. p. 104.

Hab. Etorofu, in an exposed moist field near Rubetsu.

Distrib. In the arctic and alpine regions of Europe and Asia, extending to Alaska, and the Rocky Mountains.

8. **Ranunculus japonicus**, Langsd.; Fisch. in DC. Prodr. I, p. 38; Max. Fl. As. Or. Fragm. I, p. 3; Forbes & Hemsley, Index Fl. Sin. p. 14. *R. ternatus*, DC., etc. (not Thunb.). *R. Sieboldi*, Miq. Prol. Fl. Jap. p. 193. *R. Vernyi*, Fr. & Sav. Enum. I, p. 8, II, p. 266.

Hab. Etorofu, at Shana.

The plant is closely related through some of the allied species growing on the continental side of Asia to *R. pennsylvanicus* of North America, of which, by a high authority, it is considered a variety.

However variable our plant is in many of its minor characters, incident to its great range of stations from the roadside ditch to the cold wet mountain woods, extending from the Loo Choo Islands to the Kuriles, yet there are some important characters which are constant at least within our insular limits. In these important characters, it differs distinctly from the typical *Ranunculus pennsylvanicus*.

In the latter, the akenes are provided with short, stout, and straight or slightly curved beaks, and are arranged in oblong or cylindraceous heads; and the petals are small, not surpassing the reflexed calyx. In *R. japonicus*, the akenes are provided with beaks which are attenuated and uncinate or subuncinate at the tip, and broad and flat at the base; they are arranged in globose heads; and the petals are larger, surpassing the recurved calyx. Considering all characters, our plant is more nearly related to *R. hispidus*, as characterized by Dr. Gray in his Revision of the N. Am. Ranunculi (Proc. Am. Acad. XXI, p. 375), than to *R. pennsylvanicus*, L. f.

9. **Ranunculus acris**, L.; Ledeb. Fl. Ross. I, p. 41; Reg. & Til. Fl. Ajan. p. 32; Reg. Fl. Uss. p. 7. *R. japonicus*, Thunb. Trans. Linn. Soc. III, p. 337. *R. propinquus*, C. A. Mey. in Ledeb. Fl. Alt. III, p. 332; Ledeb. Fl. Ross. I, p. 41. *R. propinquus*, var. *hirsutus*, A. Gray, Bot. Jap. p. 378.

Hab. Etorofu, at Tsurubetsu, Shana and Shibetoro.

Distrib. Europe, northern Africa, northern and middle Asia, Japan, Greenland? and Newfoundland?

10. **Trollius patulus**, Salisb. Trans. Linn. Soc. VIII, p. 303; Ledeb. Fl. Ross. I, p. 50; Reg. & Til. Fl. Ajan. p. 36. *Trollius japonicus*, Miq. Prol. Fl. Jap. p. 194.
Var. **genuinus**, l. **pedunculatus**, Reg. & Til. *l. c.*

Hab. Kurile Islands (Reg. & Til.). *Etorofu*, along a stream in a sheltered valley near Furubetsu, and also at Shana and Shibetoro.

Distrib. Middle and northern Japan, Saghalin, Kamtschatka, Eastern Siberia, Dahuria and Caucasus.

My Etorofu specimens coincide exactly with one collected by Stewart in Kamtschatka labelled as "*Trollius patulus*, Salisb., var. *genuinus*, lus. 2. *pedunculatus*, teste Regel."

11. Coptis trifolia, Salisb. Trans. Linn. Soc. VIII, p. 305; Ledeb. Fl. Ross. I, p. 52; Torr. & Gray, Fl. N. Am. I, p. 28; Fr. & Sav. Enum. I, p. 10.

Hab. Etorofu, at Furubetsu, and Nobori.

Distrib. From eastern Russia to Manchuria and Kamtschatka, Saghalin and northern and middle Japan; in North America, spreading from Alaska to Labrador and Greenland, and descending on the Atlantic side to Pennsylvania; also in Iceland.

12. Aconitum Fischeri, Reich. Ill. Sp. Acon. Gen. fol. 22, t. 22; Regel, Conspec. Acon. p. 150; F. Schm. Fl. Sach. p. 107; Fr. & Sav. Enum. I, p. 12; Forbes & Hemsley, Index Fl. Sin. p. 20.

Hab. Etorofu, on hillsides at Shana, and Shibetoro.

Distrib. Kamtschatka, Japan, Saghalin, Manchuria and China.

13. Cimicifuga simplex, Wormsk. *ex* Fisch. in DC. Prodr. I, p. 64.—Var. **ramosa**, Max. in Fr. & Sav. Enum. I, p. 13. *C. simplex*, Max. Prim. Fl. Amur. p. 29; F. Schm. Fl. Sach. p. 109. *C. fœtida*, var. *simplex*, Reg. Fl. Uss. p. 12, Pl. Radd. I, p. 122.

Hab. Shikotan. Etorofu, at Arimoi and Shibetoro.

Distrib. Dahuria, Manchuria to Kamtschatka, Saghalin, and northern and middle Japan.

FUMARIACEÆ.

14. Corydalis ambigua, Cham. & Schlecht. in Linnæa I, p. 558; Ledeb. Fl. Ross. I, p. 101; Max. Prim. Fl. Amur. p. 37; Regel, Pl. Radd. I, p. 137; F. Schm. Fl. Sach. p. 110.

Hab. Etorofu.

I have not seen the plant myself in the field, but its globular rootstocks used as food there by the Aino inhabitants were shown to me. They call them *toma*, and cook them by boiling with a certain kind of clayey earth, found on the beach, to remove the bitter taste. The rootstock is exactly the same as that of the Yezo plant, which is also called by the same name and used for the same purpose.

Distrib. Kamtschatka and its adjacent islands, northeastern Manchuria, Saghalin and northern Japan; and also in northern Siberia about the Jenisei (*ex* Ledeb.).

15. Corydalis ochotensis, Turcz. in Ledeb. Fl. Ross. I, p. 103; Forbes & Hemsley, Index Fl. Sin. p. 37 ? *C. sibirica*, var. *ochotensis*, Reg. Pl. Radd. I, p. 143.

Hab. Kurile Islands! (*ex* Max.).

Distrib. Ochotsk region and Kuriles; as vars. *Raddeana* and *mandshurica* Max., in Manchuria, northern China, and in Japan (Kiusiu to northern Yezo).

CRUCIFERÆ.

16. Parrya macrocarpa, R. Br. in Parry's First Voyage, p. 270; Hook. Fl. Bor.-Am. I, p. 47, t. 15; Ledeb. Fl. Ross. I, p. 131; Hook. & Anders., Hook. Fl. Brit. Ind., I, p. 131. *Parrya nudicaulis*, Regel, Pl. Radd. I, p. 176.

Hab. *Urup!* (*ex* Max.).

Distrib. Arctic Europe, Asia and North America; in the alpine regions of central Asia and western North America.

17. Barbarea vulgaris, R. Br. Hort. Kew. ed. 2, IV, p. 109; Ledeb. Fl. Ross. I, p. 114; Regel, Pl. Radd. I, p. 153; Torr. & Gray, Fl. N. Am. I, p. 75; Fr. & Sav. Enum. I, p. 32, II, p. 278.

Hab. *Etorofu*, at Rubetsu.

Distrib. Europe, northern and southern Africa, northern and temperate Asia to Alaska and western North America. Naturalized in the eastern United States.

18. Arabis Stelleri, D.C. Syst. II, p. 242; Ledeb. Fl. Ross. I, p. 122.—Var. **japonica**, F. Schm. Fl. Sach. p. 111; Fr. & Sav. Enum. I, p. 33, II, p. 278. *Arabis alpina* (?), var. *japonica*, A. Gray, Pl. Jap. p. 307. *A. japonica*, A. Gray, Bot. Jap. p. 381.

Hab. *Etorofu*, at Rubetsu.

Distrib. Saghalin, northern and middle Japan, Corea, Manchuria, Kamtschatka to the Aleutian Islands.

19. Arabis lyrata, L. Sp. p. 665; Torr. & Gray, Fl. N. Am. I, p. 81; DC. Prodr. I, p. 146; A. Gray, Pl. Jap. p. 307; Fr. & Sav. I, p. 33.

Hab. *Shikotan*, on rocky cliffs along the beach.

Distrib. Middle and northern Japan, and in North America: Canada to Virginia and Lake Superior, and westward in the Pacific regions, as var. *occidentalis*, Watson, *MS.* (*A. ambigua*, DC., in part).

20. Arabis ambigua, DC. Syst. II, p. 231; Ledeb. Fl. Ross. I, p. 120; Trautv. & Mey. Fl. Ochot. p. 14; Reg. & Til. Fl. Ajan. p. 46. *A. kamtschatica*, Fisch. in DC. Syst. II, p. 231 (as *A. lyrata*, β.); Ledeb. Fl. Ross. II, p. 121. *A. petræa*, β–δ, Regel, Pl. Radd. I, p. 166.

Hab. *Kurile Islands* (*ex* DC.). *Urup !* (*ex* Max.).

Distrib. Ochotsk region, northeastern Manchuria, Saghalin, Kurile Islands and Kamtschatka.

Probably this plant does not differ from Dr. S. Watson's var. *occidentalis* of *A. lyrata*. The specimens from Alaska and the Aleutian Islands, and also those which were collected in Kamtschatka by C. Wright, and which were variously referred to *A. ambigua* and *kamtschatica*, are all considered by Dr. Watson as belonging to his variety of *A. lyrata*.

21. Arabis perfoliata, Lam. Dict. I, p. 219; Fr. & Sav. Enum. I, p. 34. *Turritis glabra*, L. Sp. p. 666; Ledeb. Fl. Ross. I, p. 116.

Hab. *Etorofu*, at Arimoi.

Distrib. Europe, temperate Asia, and N. America (W. and E.).

22. Cardamine pratensis, L. Sp. p. 656; Ledeb. Fl. Ross. I, p. 125.—Var. **prorepens**, Max. Mél. Biol. IX, p. 6. *C. prorepens*, Fisch. in DC. Syst. II, p. 256; Ledeb. *l.c.* p. 125.

Hab. *Kurile Islands!* (Herb. Fisch.)

Distrib. Eastern Siberia, Dahuria, Manchuria, and Kurile Islands.

The species is circumpolar in its distribution.

23. Draba hirsuta, Turcz. in Bull. Mosc. 1840, p. 64; Ledeb. Fl. Ross. I, p. 755.

Hab. *Kurile Islands* (*ex* Turcz.).

"(Leucodraba) caulibus ramosis foliosis cum pedunculis foliisque pube stellata et pilis simplicibus incanis, foliis oblongis ovatisve acutis dentatis, petalis oblongis calyce pubescente duplo majoribus, siliculis ovato-oblongis rectis pedicellos adæquantibus pube stellata incanis calyce persistente stipatis, stylo brevissimo.

"Calyce persistente et siliculis rectis brevioribus a proxima *D. confusa*, Ehrh. (*D. incana*, L.) distinguitur."

24. **Draba borealis**, DC. Syst. II, p. 342.—Var. **kurilensis**, F. Schm. Fl. Sach. p. 114; Max. Mél. Biol. IX, p. 609; Fr. & Sav. Enum. II, p. 282. *Odontocyclus kurilensis*, Turcz. in Bull. Mosc. 1840, p. 65; Ledeb. Fl. Ross. I, p. 756.

Hab. *Kurile Islands!* (*ex* Turcz., Max., etc.) *Etorofu*, on moist cliffs at Tsurubetsu. *Shikotan*, on rocky cliffs.

My Shikotan specimens correspond exactly with the Hakodate specimens in every character. The Etorofu plant, on account of its moist habitat, is taller and weaker, but coincides perfectly with the plant under consideration in all its essential characters. Its flowering stalk is about 28 cm. long and ascending; generally about eight cauline leaves are distantly arranged quite well up to the inflorescence, and they are beset with bifurcate or stellate hairs; the upper leaves are ovate, sessile, obtuse or subacute; the lower, obovate, obtuse and tapering to the petiole. The petals are about twice as long as the sepals. The fruits are immature, smooth (very young ones slightly hairy), more or less twisted, and thickened here and there along the margin with callous spots; the styles are thick and short.

Regel & Tiling in their Florula Ajanensis, p. 59, describe a variety of *Draba borealis* from the Kurile Islands under the name of var. *foliosa*, with *D. unalaschkiana*, DC., as a synonym. Prof. Maximowicz kindly informs me that the variety was "founded on one bad specimen, which looks different enough, but indeed nearer to *D. unalaschkiana*." In the Gray Herbarium, I have found a flowering specimen of a *Draba* from Urup sent by "Grisebach or Bunge," under the name of *D. unalaschkiana*. Compared with our plant, it has larger flowers, and hairy sepals; and some of its cauline leaves are conspicuously few-dentate, the teeth spreading. It corresponds very well with the specimens from Alaska, the Aleutian Islands and northern British Columbia, having contorted pubescent pods. For the present, in the absence of good specimens from the Kurile Islands, it is hard to decide, whether the var. *foliosa*, Reg. & Til., and *D. unalaschkiana*, DC., are really the same plant or not. *D. hirsuta*, Turcz., may most likely come also under the same species.

Our present variety has been found in Yezo, Saghalin, and the Kurile Islands. The species has its range of distribution in northeastern Asia and northwestern America.

25. **Draba gelida**, Turcz. Cat. Pl. Baic.-Dah. n. 131, Fl. Baic.-Dah. I, p. 132. *D. Wahlenbergii*, var. *gelida*, Reg. Pl. Radd. I, p. 189.

Hab. *Kurile Islands* (*fide* Turcz.).

Distrib. Alpine and subalpine districts of Dahuria, and the Altai and Baikal regions.

26. **Tetrapoma barbaraefolium**, Turcz. Fl. Baic.-Dah. I, p. 147; Ledeb. Fl. Ross. I, p. 161. *Camelina barbareæfolia*, DC. Prodr. I, p. 201; Hook. Fl. Bor.-Am. I, p. 201.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Dahuria, Manchuria, and eastern Siberia; also in northwestern America.

27. **Capsella Bursa-pastoris**, Moench. Meth. p. 271; Ledeb. Fl. Ross. I, p. 199; Fr. & Sav. Enum. I, p. 38.

Hab. *Etorofu*, common about the settlements and by the roadsides.

VIOLACEÆ.

28. **Viola Selkirkii**, Goldie in Edin. Phil. Journ. VI, p. 319; A. Gray, Bot. Jap. p. 382; Max. Mél. Biol. IX, p. 730. *V. kamtschatica*, Ging. in Linnæa I, p. 406. *V. umbrosa*, Fries, Novit. p. 271; F. Schm. Fl. Sach. p. 115. *V. Selkirkii*, var. *glabra*, Miq. Prol., p. 85.

Hab. *Etorofu*, at Furubetsu.

Distrib. Northern Europe; Siberia, Dahuria, Manchuria, northern China, Japan, Saghalin, Kamtschatka; British Columbia to New Brunswick and New York.

29. **Viola Langsdorffii**, Fisch. in DC. Prodr. I, p. 296; Ledeb. Fl. Ross. I, p. 250; Max. Mél. Biol. IX, p. 741. *Viola mirabilis*, var. *Langsdorffii*, Regel, Pl. Radd. I, p. 240.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Eastern Siberia, Saghalin, Yezo, Kamtschatka, the Aleutian Islands, Alaska, British Columbia to Oregon.

30. **Viola canina**, L., var. **acuminata**, Regel, Pl. Radd. I, p. 247; Max. Mél. Biol. IX, p. 746. *V. acuminata*, Ledeb. Fl. Ross. I, p. 252; Max. Prim. Fl. Amur. p. 50. *V. micrantha*, Turcz. in Bull. Mosc. V, p. 183, X, p. 148. *V. laciniosa*, A. Gray, Pl. Jap. p. 308.

Hab. *Etorofu*, at Rubetsu.

Distrib. Middle and northern Japan, Saghalin, Manchuria, China and Corea; also in Dahuria.

This species is very widely distributed in the temperate regions of the northern hemisphere.

31. **Viola verecunda**, A. Gray, Bot. Jap. p. 382; Max. Mél. Biol. IX, p. 750; Fr. and Sav. Enum. II, p. 648; Forbes & Hemsl. Index Fl. Sin. p. 56.

Hab. *Etorufu*, at Rubetsu.

Distrib. Throughout Japan; China and Formosa.

CARYOPHYLLACEÆ.

32. **Dianthus alpinus**, L., var. **repens**, Regel, Pl. Radd. I, p. 286. *D. repens*, Willd. Sp. II, p. 681; Ledeb. Fl. Ross. I, p. 281; Torr. & Gray, Fl. N. Am. I, p. 195; Reg. & Til. Fl. Ajan. p. 63.

Hab. *Urup!* (*ex* Max.).

Distrib. Eastern Siberia along the whole coast of the Ochotsk Sea, Kamtschatka to Alaska.

33. **Dianthus superbus**, L. Sp. p. 589; Ledeb. Fl. Ross. I, p. 285; Fr. & Sav. Enum. I, p. 46.

Hab. *Shikotan*, in grassy places along the beach. *Etorofu*, at Tsurubetsu.

Distrib. Europe to Manchuria, China, Japan, and Saghalin.

34. **Lychnis affinis**, Vahl, Fr. Mant. III, p. 36. *Melandryum involucratum*, var. *affine*, Rohrb. in Linnæa XXXVI, p. 216; Regel, Pl. Radd. I, p. 319.

Hab. *Urup!* (*ex* Max.).

Distrib. Arctic Europe, Greenland and Labrador, and in northeastern Asia about the Ochotsk Sea.

35. **Cerastium semidecandrum**, L., var. **herbaceo-bracteatum**, Fenzl in Ledeb. Fl. Ross. I, p. 406; Regel, Pl. Radd. I, p. 431; Max. Mél. Biol. IX, p. 52.

Hab. *Kurile Islands!* (herb. Fischer).

Distrib. Europe, southern Japan. Not yet found in the intervening countries.

36. **Cerastium vulgatum**, L., var. **glandulosum**, Koch, Syn. ed. I, p. 134; Regel, Pl. Radd. I, p. 432; Max. Mél. Biol. IX, p. 52; Fr. & Sav. Enum. I, p. 50, II, p. 295. *C. vulgatum*, var. *brachypetalum*, Fenzl in Ledeb. Fl. Ross. I, p. 408.

Hab. *Etorofu*, at Furubetsu.

Distrib. Japan, Saghalin, Kamtschatka, Manchuria, Dahuria, Siberia to Europe. According to Regel, also in Sitka.

Var. **grandiflorum**, Fenzl in Ledeb. Fl. Ross. I, p. 410; Reg. & Til. Fl. Ajan. p. 75. *C. alpinum*, var. *typicum*, lus. *grandiflorum*, Reg. Pl. Radd. I, p. 442.

Hab. *Kurile Islands!* (Max.).

Distrib. Arctic and alpine Europe, Baika land Eastern Siberia, the Aleutian Islands and Alaska.

37. **Cerastium alpinum**, L., var. **Beeringianum**, Regel, Pl. Radd. I, p. 435. *C. Beeringianum*, Cham. & Schlecht. in Linnæa I, p. 62; Hook. Fl. Bor.-Am. I, p. 105. *C. vulgatum*, var. *Behringianum*, Fenzl in Ledeb. Fl. Ross. I, p. 409.

Hab. *Kurile Islands* (herb. Fisch. *ex* Regel).

Distrib. Western North America in the Rocky Mountain regions and northward to arctic Alaska; Aleutian Islands, Kamtschatka, Eastern Siberia to the Baikal district.

Var. **Fischerianum**, Torr. & Gray, Fl. N. Am. I, p. 188; Regel, Pl. Radd. I, p. 438; Max. Mél. Biol. IX, p. 53. *C. Fischerianum*, Ser. in DC. Prodr. I, p. 419; F. Schm. Fl. Sach. p. 118.

Hab. *Etorofu*, at Tsurubetsu.

Distrib. Middle and northern Japan, Saghalin, Manchuria, Dahuria, Eastern Siberia, Kamtschatka, the Aleutian Islands, Alaska, Arctic America to Greenland.

38. **Stellaria media**, Vill.; Fenzl in Ledeb. Fl. Ross. I, p. 377; Max. Mél. Biol. IX, p. 42.

Hab. *Etorofu*, very common at Shana, Furubetsu and elsewhere.

39. **Stellaria radians**, L., Sp. p. 422; Fenzl in Ledeb. Fl. Ross. I, p. 378; Max. Prim. Fl. Amur. p. 59; F. Schm. Fl. Sach., p. 117; Max. Mél. Biol. IX, p. 44.

Hab. *Etorofu*, at Rubetsu and Shana.

Distrib. Eastern Siberia, Kamtschatka, Yezo, Saghalin, Manchuria, Dahuria, Baikal and Altai districts of Siberia.

40. Stellaria florida, Fisch., *ex* DC. Prod. I, p. 399; Fenzl in Ledeb. Fl. Ross. I, p. 385; Regel, Pl. Radd. I, p. 418; Max. Mél. Biol. IX, p. 46.

Hab. *Kurile Islands !* (*ex* Max.).

Distrib. Eastern Siberia about the Ochotsk Sea; Kamtschatka; and the alpine region of northern Manchuria and Dahuria. As var. *angustifolia*, Max., on the alpine summits of middle Japan.

41. Stellaria Eschscholtziana, Fenzl in Ledeb. Fl. Ross. I, p. 384; Regel, Pl. Radd. I, p. 418.

Hab. *Kurile Islands !* (herb. Fisch. *ex* Max.).

Distrib. Kamtschatka and its adjacent islands.

42. Stellaria ruscifolia, Willd.; Fenzl in Ledeb. Fl. Ross. I, p. 385; Regel & Til. Fl. Ajan. p. 74; Regel, Pl. Radd. I, p. 419; Max. Prim. Fl. Amur. p. 59, Mél. Biol. IX, p. 46.

Hab. *Shikotan*, on rocky cliffs along the harbor. *Etorofu*, at Tsurubetsu.

Distrib. Northeastern Manchuria, Eastern Siberia in the Ochotsk district; Kamtschatka; northeastern Yezo.

43. Stellaria longifolia, Muhl. in Willd. Enum. Berol. p. 679; Fenzl in Ledeb. Fl. Ross. I, p, 392; Regel, Pl. Radd. I, p. 406; Torr. & Gray, Fl. N. Am. I, p. 185; F. Schm. Fl. Sach., p. 118; Max. Mél. Biol. IX, p. 48.

Hab. *Kurile Islands!* (herb. Fisch.; and Mertens *ex* Max.).

Distrib. Subarctic and central Europe, eastward along the higher mountains of southern Siberia to Manchuria, Ochotsk district, Kamtschatka, Saghalin and Yezo; Aleutian Islands, Alaska to Oregon and Colorado, across British America and the lake region to Virginia.

44. Stellaria yezoensis, Max.! Mél. Biol. XII, p. 419. *S. pilosula*, Franchet in Bull. Soc. Philom. Paris, avril, 1888.

Hab. *Etorofu*, at Tsurubetsu.

Distrib. Yezo; in moist woods on both the western and eastern coasts, and northward to Nemuro.

45. Arenaria lateriflora, L.; Hook. Fl. Bor.-Am. I, p. 102, t. 36; Torr. & Gray, Fl. N. Am. I, p. 182. *Mœhringia lateriflora*, Fenzl, Ann. Mus. Wien, I, pp. 18 and 38; Ledeb. Fl. Ross. I, p. 371; Regel, Pl. Radd. I, p. 378; Max. Mél. Biol. IX, p. 35.

Hab. *Kurile Islands!* (herb. Fisch.). *Shikotan.* *Etorofu*, at Shana and Shibetoro.

Distrib. Arctic and cool temperate regions of the northern hemisphere.

46. Arenaria peploides, L., var. **oblongifolia**, Watson, Index, p. 97. *Honckenya oblongifolia*, Torr. & Gray, Fl. N. Am. I, p. 176. *H. peploides*, Ehrh., var. *oblongifolia*, Fenzl in Ledeb. Fl. Ross. I, p. 358; Regel, Pl. Radd. I, p. 336; Regel & Til. Fl. Ajan. p. 73; A. Gray, Pl. Jap. p. 309. *Ammodenia peploides*, Rupr.; Max. Mél. Biol. IX, p. 34.

Hab. *Etorofu*, at Arimoi and Shana.

Distrib. Coast regions of Yezo, Saghalin, Manchuria, Ochotsk district, Kamtschatka, Aleutian Islands, Alaska to Oregon.

PORTULACACEÆ.

47. **Claytonia sarmentosa**, C. A. Mey. in Mém. Soc. Nat. Mosc. VII, p. 137, t. 3; Fenzl in Ledeb. Fl. Ross. II, p. 149. *C. Chamissoi*, DC. Prodr. III, p. 361. *C. lanceolata*, Hook. & Arn. Bot. Beechey, p. 123 and 344.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Alaska and adjacent islands.

Turczaninow, in his Flora Baicalensi-Dahurica, I, p. 431, alludes in a note under *Claytonia arctica*, Adams, to a plant from the Kurile Islands, which was referred to *C. acutifolia* by Pallas. Judging from his descriptions, it seems to me that Pallas' plant may not be different from *C. sarmentosa*, var. *tenella*, Fenzl.

HYPERICACEÆ.

48. **Hypericum erectum**, Thunb.! Fl. Jap. p. 296; Miq. Prol. Fl. Jap. p. 147; Max. Mél. Biol. XI, p. 168. *H. attenuatum*, F. Schm. Fl. Sach. p. 119.

Hab. *Etorofu*, at Shana.

Distrib. Saghalin, Japan, China?

GERANIACEÆ.

49. **Geranium yesoense**, Fr. & Sav. Enum. II, p. 305; Max. Mél. Biol. X, p. 625. *G. erianthum*, A. Gray, Bot. Jap. p. 383 (Hakodate specimens)!

Hab. *Shikotan*, in grassy places on the beach. *Etorofu*, at Shana.

Distrib. Common along the coasts of Yezo, from Hakodate to Nemuro, and also on the Ishikari beach. The plant seems to be a genuine littoral species.

50. **Geranium erianthum**, DC. Prodr. I, p. 641; Torr. & Gray, Fl. N. Am. I, p. 206; Ledeb. Fl. Ross. I, p. 464; F. Schm. Fl. Sach. 120; Fr. & Sav. Enum. I, p. 69, II, p. 303; Max. Mél. Biol. X, p. 631.

Hab. *Etorofu*, at Rubetsu.

Distrib. Northern Japan; Saghalin; northeastern Manchuria; Eastern Siberia in the Ochotsk region; Kamtschatka and adjacent islands; northwestern North America.

51. **Oxalis Acetosella**, L. Sp. p. 433; Torr. & Gray, Fl. N. Am. I, p. 211; Ledeb. Fl. Ross. I, p. 482; F. Schm. Fl. Sach. p. 120; Fr. & Sav. Enum. I, p. 69.

Hab. *Etorofu*, in the vicinity of Furubetsu.

Widely distributed over the north temperate zone.

52. **Impatiens Nolitangere**, L. Sp. p. 938; DC. Prodr. I, p. 687; Ledeb. Fl. Ross. I, p. 481; Max. Prim. Fl. Amur. p. 71; F. Schm. Fl. Sach. p. 120; Fr. & Sav. Enum. I, p. 70.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Japan; Saghalin; Kamtschatka; Manchuria; Corea; northern China; and throughout northern Asia to Europe.

RUTACEÆ.

53. **Skimmia japonica**, Thunb.! Fl. Jap. p. 62; Sieb. & Zucc. Fl. Jap. I, p. 127, t. 68; A. Gray, Bot. Jap. p. 383; F. Schm. Fl. Sach. p. 121; Fr. & Sav. Enum. I, p. 74.

Hab. *Etorofu*, at Furubetsu, Arimoi and Shibetoro.

Distrib. Japan, from the alpine woods of Kiusiu to the northern end of Yezo and to the southern Kuriles. It was also found in southern Saghalin.

ILICINEÆ

54. Ilex crenata, Thunb. Fl. Jap. p. 78; Sieb. & Zucc. Fl. Jap. Fam. Nat. I, n. 147; Fr. & Sav. Enum. I, p. 76; F. Schm. Fl. Sach. p. 122; Max. Mém. Acad. Pétersb. XXIX, pp. 21 and 331. *I. Thomsoni*, Hook. f. Fl. Brit. Ind. I, p. 602 (*fide* Max.).

Hab. *Etorofu*, at Arimoi and Shibetoro.

The Kurile plants are all small straggling shrubs with roundish-obovate leaves (14–16 mm. in length). The species is found from southern Saghalin southward through the entire length of Japan, recurring in the temperate region of eastern Himalaya.

55. Ilex rugosa, F. Schm. Fl. Sach. p. 122, t. 3, f. 1–7; Max. Mém. Acad. Pétersb. 7e Ser. XXIX, p. 47; Fr. & Sav. Enum. II, p. 311.

Hab. *Etorofu*, at Furubetsu, Shana, and Shibetoro.

Distrib. Saghalin; northern and middle Japan.

CELASTRACEÆ.

56. Evonymus alata, Thunb. Fl. Jap. p. 98; Miq. Prol. p. 18; Fr. & Sav. Enum. I, p. 78; Max. Mél. Biol. XI, p. 196; F. Schm. Fl. Sach. p. 121.

Hab. *Etorofu*, at Arimoi.

Distrib. Japan; Saghalin; southern Manchuria; northern and middle China; Corea.

A small shrub about a foot high with brownish corky protuberances in more or less irregularly interrupted rows; leaves glabrous beneath; peduncle only one-flowered, 6–6½ mm. long; two opposite minute brownish bracts toward the base. I consider the plant to be of the typical form. The corky ridges, though not well developed, and the smoothness of the leaves exclude it from vars. *subtriflora* and *pubescens*.

57. Evonymus macroptera, Rupr. in Bull. Phys. Math. XV, Pl. Maack, n. 24; Max. Fl. Amur. p. 75, Mél. Biol. XI, p. 184; F. Schm. Fl. Sach. p. 121.

Hab. *Etorofu*, at Nobori and Shana.

Distrib. Middle and northern Japan; Saghalin; eastern Manchuria.

SAPINDACEÆ.

58. Acer pictum, Thunb. Fl. Jap. p. 161; Miq. Prol. p. 19; Fr. & Sav. Enum. I, p. 87; Max. Mél. Biol. X, p. 599. *A. Mono*, Max. Prim. Fl. Amur. p. 68; F. Schm. Fl. Sach., p. 119.

Hab. *Etorofu*, at Furubetsu and Nobori.

Distrib. Japan; Saghalin; Manchuria; northeastern China; Corea.

59. Acer spicatum, Lam. Dict. II, p. 381; Torr. & Gray, Fl. N. Am. I, p. 246.—Var. **ukurunduense**, Max. Prim. Fl. Amur. p. 65; F. Schm. Fl. Sach. p. 119; Fr. & Sav. Enum. I, p. 88; Max. Mél. Biol. X, p. 594. *Acer ukurunduense*, Trautv. & Mey. Fl. Och. p. 24.

Hab. *Etorofu*, at Furubetsu and Nobori.

Distrib. Middle and northern Japan; Saghalin, eastern Manchuria and the Ochotsk district.

ANACARDIACEÆ.

60. **Rhus trichocarpa**, Miq.! Prol. Fl. Jap. p. 16; Fr. & Sav. Enum. I, p. 95; Engler in DC. Monog. Phanerog. IV, p. 379.

Hab. *Etorofu*, on the Rubetsu side of Nobori.

Distrib. Throughout Japan; Corea.

61. **Rhus Toxicodendron**, L., var. **radicans**, Torr. Fl. U. S. p. 324; Torr. & Gray, Fl. N. Am. I, p. 218; Fr. & Sav. Enum. I, p. 93; F. Schm. Fl. Sach. 123; Gray, Bot. Jap. p. 384; Engler, DC. Monog. IV, p. 394.

Hab. *Shikotan.* *Etorofu*, at Furubetsu.

Distrib. Very widely distributed in North America from the Atlantic coast to the Pacific. Also in southern Saghalin and Japan: from Yezo to Shikoku.

LEGUMINOSÆ.

62. **Thermopsis fabacea**, DC. Prodr. II, p. 99; Ledeb. Fl. Ross. I, p. 511; A. Gray, Bot. Jap. p. 385; F. Schm. Fl. Sach. p. 123; Miq. Prol. p. 230; Fr. & Sav. Enum. I, p. 94; Forbes & Hemsley, Index Fl. Sin. p. 150. *Sophora fabacea*, Pall. Sp. Astrag. p. 122, t. 90, f. 2.

Hab. *Kurile Islands* (*ex* Pallas). *Etorofu*, near Tsurubetsu. *Shikotan.*

Distrib. Kamtschatka; Saghalin; Japan to Loochoo; Corea; Manchuria; China as south as Amoy. The plant is restricted to the littoral region.

63. **Lupinus nootkatensis**, Donn, Cat. Hort. Cant.; Torr. & Gray, Fl. N. Am. I, p. 375; Ledeb. Fl. Ross. I, p. 512; Watson, Rev. Lup. p. 524. *L. macrorhizos*, Georgi, Beschr. d. Russ. R. III, 4, p. 1162.

Hab. *Kurile Islands* (Merk, *fide* Georgi).

Distrib. From Vancouver to northern Alaska; Aleutian Islands, to the Kuriles.

64. **Trifolium Lupinaster**, L. Sp. p. 766; Ledeb. Fl. Ross. I, p. 551; Max. Prim. Fl. Amur. p. 79; Fr. & Sav. Enum. I, p. 96, II, p. 324; Forbes & Hemsley, Index Fl. Sin. p. 155.

Hab. *Shikotan*, in grassy places along the beach. *Etorofu*, at Shana.

Distrib. Kamtschatka to northern and middle Japan, Manchuria, northeastern China, Mongolia, westward through Siberia to the central part of Russia in Europe.

65. **Oxytropis Pumilio**, Ledeb. Fl. Ross. I, p. 589; Bunge, Sp. Gen. Oxytrop. p. 115. *Astragalus Pumilio*, Pall. Sp. Astr. p. 67, t. 55.

Hab. *Kurile Islands* (Merk, *ex* Pallas).

The plant has not yet been found elsewhere. All that we know of it is from the descriptions and figures given by Pallas. Bunge observes that all the characters of this plant agree very well with those of *O. revolutum*, Ledeb., with the exception of its very short stalk and smaller bracts. As its ripened fruits were not collected, the important character of the legume and its stipe is still wanting to settle satisfactorily its true position among the most closely related species.

66. **Vicia unijuga**, Al. Braun, App. Ind. Sem. Hort. Berol. 1853, p. 12; Max. Mél. Biol. IX, p. 65. *Orobus lathyroides*, L.; Ledeb. Fl. Ross. I, p. 688; F. Schm. Fl. Sach. p. 124. *O. japonicus*, Sieb. Toelicht. tot de ontd. v. Vries, p. 155. *Lathyrus Messerschmidii*, Fr. & Sav. Enum. I, p 106.

Hab. *Etorofu*, in roadside thickets in the vicinity of Shana.

The plant is very common on plains and in thickets in Yezo and the northern and middle provinces of the main island of Japan. Towards the south it is found only in alpine woods. It also grows in Saghalin, Manchuria, Corea and northern China, extending westward to the Altai region of Siberia.

67. **Vicia Cracca**, L.; Ledeb. Fl. Ross. I, p. 674; Torr. & Gray, Fl. N. Am. I, p. 270; Max. Prim. Fl. Amur. p. 82; Miq. Prol. p. 238.

Hab. *Shikotan.* *Etorofu*, at Tsurubetsu, and Shana.

This variable species is widely distributed throughout the temperate and subarctic regions of the northern hemisphere.

68. **Vicia amoena**, Fisch. in DC. Prodr. II, p. 355; Ledeb. Fl. Ross. I, p. 672; Max. Prim. Fl. Amur. p. 81; F. Schm. Fl. Sach. p. 124; Fr. & Sav. Enum. I, p. 104, II, p. 381.

Hab. *Etorofu*, in thickets around Arimoi.

In Saghalin, the plant is said to be common on the whole western coast south of Dui. It is also widely distributed in the island of Yezo, and in the northern and middle parts of the main island of Japan. On the continent, it spreads through the entire length of Siberia from the Ural region to Kamtschatka, and extends southward to Corea and northern China.

69. **Lathyrus maritimus**, Bigel. Fl. Bost. 2nd. ed. p. 268; Torr. & Gray, Fl. N. Am. I, p. 273; Miq. Prol. p. 233; F. Schm. Fl. Sach. p. 124; Max. Mél. Biol. IX, p. 60. *Pisum maritimum*, L.; Ledeb. Fl. Ross. I, p. 661.

Hab. *Urup!* (*ex* Max.). *Shikotan*, in sandy beaches at the foot of cliffs. *Etorofu*, at Rubetsu and Shana.

Very widely distributed in arctic and temperate Europe, Asia and North America. The most southern locality for this plant in the northern hemisphere, so far as I am aware, is in Japan, where it comes down to the vicinity of Nagasaki (about 32° N. lat.).

According to Hooker, a similar plant was collected at Cape Tres Montes in Patagonia by Darwin. From the wild and desolate nature of the place, and from the utter absence of other introduced plants, he concludes that it could not have been imported into this locality, "one of the most remote and little visited spots of the American continent." Fl. Antarc., II, p. 260.

70. **Lathyrus palustris**, L., var. **pilosus**, Ledeb. Fl. Ross. I, p. 686; Max. Prim. Fl. Amur. p. 83; F. Schm. Fl. Sach. p. 124; Max. Mél. Biol. IX, p. 61.

Hab. In swampy places; *Etorofu*, at Rubetsu and Shibetoro.

The present variety of this variable and widely distributed species ranges throughout the northeastern part of Asia and adjacent islands, and also in Alaska (Kellogg, U. S. Coast Survey, 1867). It is very common throughout the island of Yezo; but so far, no definite localities have been given for it in the main island of Japan. The plant is be-

lieved by the inhabitants of Etorofu to have great virtues in hysteria, and is largely brought back by the Japanese sailors and fishermen who visit this island. It is known there by the name of *Benizarasa*.

ROSACEÆ.

71. **Prunus Ceraseidos**, Max. Mél. Biol. XI, p. 698. *Ceraseidos apetala*, Sieb. & Zucc. Münch. Abhandl. III, p. 743, t. v, fig. I. 1-8. *Prunus apetala*, Fr. & Sav. Enum. II, p. 329.

Var. **kurilensis**. A straggling shrub; the bark of the young branches greyish or greyish-brown and glabrous; leaves appressed-hairy above, and more or less villose along the veins beneath, orbicular or roundish-oblong, or sometimes obovate at the end of the branches, rounded or obtuse at the base, abruptly cuspidate at the apex, 7–12 (9)–veined, prominently incised-serrate; teeth spreading, 1–3-serrate, and glandular at the tips; pedicels villose; drupe purplish-red (nearly ripened); putamen oval, smoothish, with three nearly parallel veins near its keeled edge. The petiole measures 10–15 mm. long; the blade, 70 × 52 – 85 × 60 mm.; the cuspidate tip, 8–12 mm.; the peduncle, 22 mm. long, and the putamen, 8 × 5 mm.

Hab. In exposed hill tops along the coast; *Etorofu*, at Rubetsu and Shibetoro.

All that I have seen in the above mentioned localities are straggling shrubs about three or four feet high. They may grow larger in less exposed places.

The plant is most closely related to *Prunus Ceraseidos*, Max. The shape and character of the putamen, in these two plants, agree very well. The only prominent points of difference between them are in the form and texture of the leaves. In *Prunus Ceraseidos*, they are broadly elliptical or obovate, and long-cuspidate, and their texture is less coriaceous than that of the Kurile plants. Such differences, however, may be accounted for by the difference in their localities. In the absence of flowers (which are well characterized in *Prunus Ceraseidos* by the great development of the calyx-tube), it is difficult to form any decided opinion as to whether the Kurile plants should be separated from that species or not. So far as my materials allow me to judge, I am inclined to regard it provisionally as a variety of *Prunus Ceraseidos*.

Prunus Ceraseidos has been collected, thus far, only in the alpine and subalpine woods of middle Japan.

72. **Prunus Maximowiczii**, Rupr. in Bull. Acad. St. Petersb. XV, p. 131; Max. Prim. Fl. Amur. p. 89; F. Schm. Fl. Sach. p. 125; Fr. & Sav. Emum. I, p. 118; Max. Mél. Biol. XI, p. 700.

Hab. *Etorofu*, in deciduous woods in the vicinity of Furubetsu and Arimoi.

The plant is found throughout the entire length of Japan; also in Corea, eastern Manchuria and Saghalin.

73. **Prunus Ssiori**, F. Schm. Fl. Sach. p. 124; Max. Mél. Biol. XI, p. 707; Fr. & Sav. Enum. I, p. 119, II, p. 330; Forbes & Hemsley, Index Fl. Sin. p. 221.

Hab. *Etorofu*, in deciduous woods in the vicinity of Furubetsu.

Distrib. Southern Saghalin, northern and middle Japan, northeastern and central China.

74. ?Prunus sp., Ledeb. Fl. Ross. II, p. 9.

Hab. *Urup* and *Etorofu* (Pallas).

In his "Neue nordische Beiträge," IV, pp. 131, 133, Pallas mentions a tree from the southern Kuriles, which has the appearance of a birch with birch-like leaves, but with the flowers of *Prunus Padus* (Traubenkirschen), and having hard wood. From this simple description, though graphic, it is rather hard to conjecture what species of *Prunus* or other plant is here meant. To me it seems to apply very well to *Prunus Ssiori*, which I have found in Etorofu. The latter plant has flowers very much like those of *P. Padus*. Its bark looks like that of a birch, and can be peeled off like that in large pieces. Its wood, which is very hard and tough, is used in Yezo for oars, sledges and similar purposes. But its leaves can hardly be called birch-like.

Professor Maximowicz takes the plant referred to by Pallas to be *Sorbus alnifolia*, C. Koch (Mél. Biol. IX, p. 659, in a foot-note, and also in his letter). As its name suggests, the venation of the leaves of *S. alnifolia* is very much like that of *Alnus*. Its wood is very strong and hard, but its inflorescence is different from that of *P. Padus*. *S. alnifolia* has been found in Manchuria and also in the subalpine woods of middle Japan, extending northward to Yezo, where I have collected it even as far north as at Abashiri on the Ochotsk coast. Though no one has ever yet seen or collected *S. alnifolia* in the Kurile islands, it is not at all improbable, judging from its range of distribution, that it does occur there.

75. Aruncus sylvester, Kostel.; Max. Act. Hort. Petrop. VI, p. 169. *Spiræa Aruncus*, L.; Ledeb. Fl. Ross. II, p. 16.—Var. **kamtschatica**, Max. *l. c.* p. 170.

Hab. *Kurile islands* (*fide* Max.).

I have adopted in this and the following species the nomenclature set forth by Professor Maximowicz in his revision of the *Spiræaæ*. According to him, this variety has a limited range of distribution in extreme Eastern Siberia, Kamtschatka and the northern Kuriles. The species has a very wide range of distribution in the temperate and subarctic regions of Europe, Asia and North America.

76. Spiraea betulifolia, Pall. Fl. Ross. I, p. 33, t. 16; Ledeb. Fl. Ross. II, p. 14; Torr. & Gray, Fl. N. Am. I, p. 414; Max. Act. Hort. Petrop. VI, p. 207.

Hab. *Shikotan.*

My Kurile plant belongs to var. *typica*, fl. *ochroleuco*, Max., which has been found in British Columbia and Alaska, and also in Eastern Siberia, Kamtschatka, Manchuria, Saghalin and northern Japan. In North America the species is more widely distributed, occurring in two or more well definable forms. As var. *corymbosa*, it is found from the Atlantic to the Pacific coasts. As var. *typica*, fl. *roseo*, it occurs in the Pacific regions of North America, in the Rocky Mts. and Sierra Nevada. The same form has been also found in the southeastern part of Manchuria.

77. Sorbaria sorbifolia, A. Br. in Aschers. Fl. Brandenb. p. 177; Max. in Act. Hort. Petrop. VI, p. 223. *Spiræa sorbifolia*, L.; Ledeb. Fl. Ross. II, p. 15; F. Schm. Fl. Sach. p. 126.—Var. **stellipila**, Max., *l. c.*

Hab. *Shikotan.*

Distrib. Throughout the island of Yezo from Hakodate to the Ochotsk coast; the island of Saghalin; the eastern and southern portions of Manchuria and in Eastern Siberia. The plant has not yet been found in the main island of Japan.

On the continent, a variety having glabrous leaves is more common and more widely distributed throughout the entire extent of Siberia from the Ural regions to Kamtschatka; and also in Dahuria, Manchuria and Saghalin.

78. **Filipendula kamtschatica**, Max. in Act. Hort. Petrop. VI, p. 248. *Spiræa kamtschatica*, Pall. Fl. Ross. I, p. 41, t. 28; Ledeb. Fl. Ross. II, p. 19; Max. Prim. Fl. Amur. p. 93; F. Schm. Fl. Sach. p. 126.

Hab. *Kurile Islands!* (herb. Fischer). *Shikotan.* *Etorofu*, at Furubetsu.

Distrib. In Japan, it is very common in the northern provinces, attaining an enormous size, especially in swampy places in the woods. It is also found in Saghalin and eastern Manchuria, and in Kamtschatka to the Aleutian Islands.

79. **Filipendula palmata**, Max. in Act. Hort. Petrop. VI, p. 250. *Spiræa palmata*, Pall. Reise III, App. p. 735, t. 2, f. 1, and Fl. Ross. I, p. 40, t. 27; Forbes & Hemsley, Index Fl. Sin. p. 226. *Spiræa digitata*, Willd. Spec. II, p. 1061; Ledeb. Fl. Ross. II, p. 17.

Hab. *Kuriles !* (*ex* Max.).

Distrib. From Kamtschatka, throughout Eastern Siberia to Dahuria and southeastern part of Mongolia; also in Manchuria, Corea and northern China. It has also been found in Saghalin.

80. **Rubus Chamaemorus**, L.; Ledeb. Fl. Ross. II, p. 71; Torr. & Gray, Fl. N. Am. I, p. 451; Gray, Bot. Jap. p. 187; F. Schm. Fl. Sach. p. 128; Max. Mél. Biol. VIII, p. 374.

Hab. *Kuriles*, northern (*ex* Pallas).

Distrib. In Japan the plant has been found only in the island of Yezo, where it was collected by J. Small at Cape Romanzoff ($45\frac{1}{2}^\circ$ N. lat.), by Dr. Albrecht at Hakodate, and by the writer in a sphagnous bog near Sapporo. The plant is very widely distributed throughout the arctic and subarctic regions of the northern hemisphere. It is noteworthy that this arctic plant descends further southward in the islands of Japan (41°) than in any other portion of the north temperate zone. Next comes the Atlantic coast of North America, where it descends as far south as 44°; in Europe, to 50° in alpine districts; in northwest America to 52°.

81. **Rubus Idaeus**, L., var. **strigosus**, Max. Mél. Biol. VIII, p. 394; Foche in Naturw. Ver. zu Brem. IV, pp. 147 and 156. *Rubus strigosus*, Michx. Fl. Bor.-Am. I, p. 297; Torr. & Gray, Fl. N. Am. I, p. 453. *Rubus Idæus*, Max. Prim. Fl. Amur. p. 99. *Rubus Idæus*, var. *microphyllus*, Turcz. Fl. Baic.-Dah. I, p. 370. *Rubus Idæus*, var. *aculeatissimus*, C. A. Mey. in Reg. & Til. Fl. Ajan. p. 87; F. Schm. Fl. Sach. p. 128.

Hab. *Shikotan*, on hillsides.

Distrib. Very common throughout the island of Yezo and also in the northern provinces of the main island of Japan. It occurs also in Saghalin, Manchuria and Siberia, from the Altai region to Kamtschatka. The plant is, however, most widely distributed in the subarctic and temperate regions of North America.

Georgi, in his "Geographisch-physikalische und naturhistorische Beschreibung des Russischen Reichs," III, 4, p. 1029, mentions the occurrence of *Rubus fruticosus*, L., in the Kurile Islands. It is most probable that he mistook some other black-berried species for the plant, for we know that *Rubus fruticosus* has thus far been found in a wild state only in Europe and in western Asia as far east as the western temperate Himalaya.

Growing in Yezo and in the alpine districts of the main island of Japan there is a species of *Rubus* with a fruit which is dark-purple when ripe. In its general characters it approaches very closely *Rubus occidentalis* of North America. It forms a shrubby bush, with somewhat recurved stems, which are generally destitute of prickles and glaucous. Young branches and petioles are villosely tomentose, armed with more or less recurved prickles, and often covered with glandular hairs, which are especially prominent on peduncles and pedicels. The leaves are pinnately 3-foliolate; the leaflets broadly ovate, coarsely doubly-serrate, canescently tomentose beneath, the terminal sometimes subcordate at base, and the lateral distinctly short-petioled. The midribs are armed beneath with a few recurved prickles, and the stipules are setaceous. Axillary peduncles 1–3-flowered, the terminal generally 8–10-flowered in a close rounded corymb; pedicels once to twice the length of the calyx-lobes, and both calyx and pedicel destitute of prickles. The fruit is roundish, glaucous, and dark-purple when ripe. A partly ripened fruit when dried hardens up close to the stones, showing the lacunose markings on the surface.

From the typical form of *Rubus occidentalis* it is distinguished chiefly by its younger branches being villosely tomentose intermixed often with glandular hairs, and by its pedicels being destitute of prickles. The fruits are somewhat smaller and much more closely clustered. In other respects there are striking resemblances between these two plants.

From *Rubus Idæus*, var. *strigosus* it is easily distinguished by the petioled lateral leaflets, by the absence of prickles on the calyx, by the shape of the inflorescence, and above all by the color of the ripened fruits.

This plant has generally been taken in Japan to be a variety of *Rubus Idæus*, doubtless from the fact that its ripened fruits were not known to collectors. From the descriptions given by Franchet & Savatier of their *R. Idæus*, var. *exsicca*, there is no doubt that their plant is the same as ours. Our plant, however, is very closely related to *R. occidentalis* and should not be placed under *R. Idæus*. As the former is a variable plant and is very widely dispersed through the continent of North America,[1] I prefer to consider our plant as its variety rather than as a distinct new species:—

82. Rubus occidentalis var. **japonicus**, L. Sp. p. 493; Torr. & Gray, Fl. N. Am. I, p. 453. *R. Idæus*, var. *exsicca*, Fr. & Sav. Enum. II, p. 334; Matsumura, Cat. Pl. Herb. Imp. Univ. Tokyo, p. 57.

Hab. In the alpine woods of middle *Japan:* Komagatake, Prov. Shinano (Yatabe); Nikko (Savatier); "Niphon media" (Tschonoski!); *Yezo:* in rich alluvial woods, Sapporo (K. M., July, 1880, fl.); in cleared forests, Samani Sando, Prov. Hidaka (K. M., Aug. 19, 1884, fr.); *Kurile Islands?* (Georgi).

83. Geum strictum, Ait. Hort. Kew. II, p. 217; Ledeb. Fl. Ross. II, p. 22; Torr. & Gray,

[1] Focke, Batographische Abhand. in Naturw. Verein zu Bremen IV, pp. 147 and 165.

Fl. N. Am. I, p. 421; F. Schm. Fl. Sach. p.126; Fr. & Sav. Enum. I, p. 128, II, p. 335; Scheutz, Prod. Monog. Georum, p. 28.

Hab. *Etorofu*, in the vicinity of Furubetsu.

Distrib. Eastern Europe, northern Asia, northern and middle China, Corea, Japan, North America, South America and New Zealand.

84. **Geum macrophyllum**. Willd. Enum. I, p. 537; Torr. & Gray, Fl. N. Am. I, p. 421; Ledeb. Fl. Ross. II, p. 23; F. Schm. Fl. Sach. p. 126. *G. japonicum*, Scheutz, Monog. p. 31 (not Thunb., and excl. Jap. plants).

Hab. *Kurile Islands* (*ex* F. Schmidt).

There is great confusion in this group of *Geum*, evidently caused by a striking similarity in the character of the akenes and by a variability in the shape of the leaves and in the pubescence. For instance a gradual transition is found between *G. macrophyllum* and *strictum*. F. Schmidt denies even the value of the hairs on the receptacle as a reliable distinguishing character among the Asiatic plants.

Examination of a large number of the American specimens of these species in the Gray Herbarium indicates that the receptacle of *G. macrophyllum* is always subglabrous, or at least very much less hairy than in the case of *G. strictum*. In *G. macrophyllum*, the large and round-heart-shaped terminal leaflets of the radical leaves and also the bristly hairiness of the stem and petiole are quite constant; while in *G. strictum* these characters are exceedingly variable.

N. J. Scheutz in his monograph of the genus *Geum* brings together *G. japonicum*, Thunb., and *G. macrophyllum*, Willd., as one and the same species. But there are many important points of difference between these two plants, which seem to prove very distinctly that they are as distinct from each other as any two related species in this genus. *G. japonicum* has softer and denser pubescence, and is generally more or less bent in a zigzag way; its upper cauline leaves are rounded and petioled and dentate, and not coarsely serrate or doubly-serrate as in *G. macrophyllum*. The most important distinguishing character is that the receptacle in the former is even more hairy than in *G. strictum*, though Scheutz describes it as glabrous or obscurely pubescent.

Distrib. Widely spread in North America from the Atlantic to the Pacific coasts; Aleutian Islands; Kamtschatka and Kurile Islands.

85. **Potentilla fruticosa**, L., Sp. p. 495; Georgi, Besch. III, p. 1033; Ledeb. Fl. Ross. II, p. 61; Torr. & Gray, Fl. N. Am. I, p. 445; Lehm. Rev. Pot. p. 16; Max. Mél. Biol. IX, p. 157; Fr. & Sav. Enum. I, p. 133.

Hab. *Kurile Islands* (*ex* Georgi). *Shikotan*, on hillsides and grassy places on the beach.

Distrib. Northern and western Europe, northern Asia, Himalaya, northern China, northern and middle Japan, Saghalin and North America.

The inhabitants of the northern Kuriles are said to drink a decoction of its leaves as a tea.

86. **Potentilla fragarioides**, L., var. **stolonifera**, Max. Mél. Biol. IX, p. 160; Hook. f., Fl. Brit. Ind. II, p. 351. *P. stolonifera*, Lehm. in Ind. Sem. H. Bot. Hambg., 1831, n. 5, and Revis. Pot. p. 44, t. 15; Ledeb. Fl. Ross. II, p. 38. *P. fragarioides*, Schlecht. & Cham. in Linnæa, II, p. 25.

Hab. *Shikotan*, in grassy places on the beach. *Etorofu*, at Furubetsu.

My Kurile specimens correspond very well with the figure and description of Lehmann in his Revisio Potentillarum. Some of the radical leaves of the plant collected at Furubetsu attain the enormous length of 30 cm. These leaves have in all cases only two pairs of lateral leaflets; while the smaller leaves have generally three pairs, the pairs decreasing in size toward the base. The akenes are glabrous, and sometimes more or less wrinkled; the styles subterminal, and slightly shorter than the akenes; and the receptacle very hairy.

P. fragiformis var. *japonica*, A. Gray, Bot. Jap. p. 387, which Professor Maximowicz makes a synonym of our present plant, proves according to the original specimen to be *P. fragarioides*, var. *ternata*.

Distrib. Kamtschatka and adjacent islands, Saghalin, Japan, and eastern Himalaya (*ex* Max.).

87. Potentilla fragiformis, Willd. in Magaz. d. Gesellsch. naturf. Freunde zu Berl. VII, p. 294; Ledeb. Fl. Ross. II, p. 59; Ser. in DC. Prodr. II, p. 586; Lehm. Monog. Pot. p. 163, t. 15, and Rev. Pot. p. 155; Reg. & Til. Fl. Ajan. p. 85; Max. Prim. Fl. Amur. p. 96; F. Schm. Fl. Sach. p. 127; Watson in Proc. Am. Acad. VIII, p. 559; Forbes & Hemsley, Index Fl. Sin. p. 242. *P. grandiflora*, L., var. *fragiformis*, Ser. in DC. Prodr. p. 572. *P. grandiflora*, Max. Mél. Biol. IX, p. 161.

Hab. *Kurile Islands!* (*ex* Max.). *Etorofu*, on rocky cliffs near Rubetsu.

Densely villose; stem ascending, 20–30 cm. long; radical leaves moderately villose (in small older leaves), or densely silky villose (in younger larger leaves); leaflets rhombic cuneate; teeth deeply cut, oblong and obtuse; cyme generally about 5-flowered; bractlets broadly ovate and obtuse, shorter than the lanceolate or ovate-lanceolate sub-acute sepals; sepals and bractlets erect in fruit, enclosing many smooth akenes which are more or less distinctly keeled.

The plants collected at Kombumori and Nemuro on the northeastern coast of Yezo were equally large and were in flower. The flowers are very large, measuring about 40 mm. across.

Distrib. Siberia from the Altai region to Kamtschatka; Manchuria, northeastern and middle China, Saghalin, Yezo, Aleutian Islands, Alaska to Washington Territory.

Professor Maximowicz considers the European *P. grandiflora*, L., and *P. fragiformis*, Willd., of northeastern Asia, as identical, on the ground that the distinctive characters based on the bractlets and the teeth of the leaves do not hold very well in every case. He includes under the same species *P. gelida*, C. A. Mey., and also *P. villosa*, Pall., as its varieties. A similar opinion is endorsed by Sir J. D. Hooker in his Flora of British India, II, p. 357, in connection with *P. gelida*.

So far as the materials at my hand allow me to judge, there seems to be a well marked distinctive character in the ripened akenes of these plants, which if proved to be constant in all other cases would help not a little in determining their relative position.

Potentilla grandiflora:—Akenes ovoid, glabrous, obtusely and obscurely ridged on the margin, with four prominent curved veins running almost parallel ("arcuato-rugosis" of Seringe).

P. fragiformis:—Akenes elongated-ovoid, larger (1.8 mm. long), smooth, with a more or less prominently keeled ridge on the margin, the veins inconspicuous.

P. villosa:—Akenes elongated-ovoid, smooth, with the margin more or less prominently ridged, the veins inconspicuous.

P. gelida:—Akenes ovoid, glabrous, with 3–4 distinct curved veins running almost parallel, obtusely ridged.

It will be seen from the characters of the ripened akenes, that *P. grandiflora* and *gelida* are closely related; while *P. fragiformis* and *villosa* form another group.

88. **Potentilla anserina** L. Sp. p. 495; Ledeb. Fl. Ross. II, p. 44; Lehm. Rev. Pot. p. 188; Watson, Proc. Am. Acad. VIII, p. 562; Fr. & Sav. Enum. I, p. 131.

Hab. *Etorofu*, at Rausu.

Distrib. Arctic and temperate regions of Europe, Asia and North America. Also in South America and Australia.

89. **Agrimonia Eupatoria**, L. Sp. p. 448; Ledeb. Fl. Ross. II, p. 31; Torr. & Gray, Fl. N. Am. I, p. 431; Forbes & Hemsley, Ind. Fl. Sin. p. 246. *A. pilosa*, Ledeb. Ind. Sem. H. Dorp. Suppl., 1823, p. 1. *A. viscidula*, Bunge, Enum. Pl. Chin. Bor. p. 26.

Hab. *Shikotan.*

Distrib. Throughout the temperate regions of the northern hemisphere.

90. **Sanguisorba tenuifolia**, Fisch. *ex* Link., Enum. Pl. Hort. Berol. I, p. 144; Ledeb. Fl. Ross. II, p. 28; Max. Mél. Biol. IX, p. 152.—Var. **alba**, Trautv. & Mey. Fl. Ochot. p. 35; Max., *l. c.*, p. 153. *Poterium tenuifolium*, var. *album*, Fr. & Sav. II, p. 342; Forbes & Hemsley, Ind. Fl. Sin. p. 247.

Hab. *Shikotan.* *Etorofu*, at Rubetsu.

Distrib. Eastern Siberia, Kamtschatka, Manchuria, Dahuria, China, Corea, northern and middle Japan and Saghalin.

91. **Rosa acicularis**, Lindl. Ros. Monog. p. 44, t. 8; C. A. Meyer, Zimmtrosen, p. 15; Crepin, Prim. Monog. Ros. p. 299; Regel, Tent. Ros. Monog. p. 18.

Hab. *Etorofu*, in roadside thickets at Tsurubetsu.

Distrib. Europe, northern Asia, China, northern and middle Japan, and in North America.

92. **Rosa rugosa**, Thunb. Fl. Jap. p. 213; C. A. Mey., Zimmtrosen, p. 32; Crepin, Prim. Monog. Ros. p. 336; Regel. Tent. Ros. p. 24; Sieb. & Zucc. Fl. Jap. I, p. 66, t. 28. *R. kamtschatica*, Red. Ros. I, p. 47.

Hab. On the sandy beach: *Shikotan.* *Etorofu*, at Tsurubetsu, Shana and Shibetoro, *Shimushu* (S. Akakabe). *Kuriles* (*ex* Georgi, Pallas).

Distrib. Japan, Saghalin, Kamtschatka, Manchuria, Corea and China.

93. **Pyrus sambucifolia**, Cham. & Schlecht. in Linnæa, II, p. 36; Torr. & Gray, Fl. N. Am. I, p. 472; Ledeb. Fl. Ross. II, p. 99; Max. Prim. Fl. Amur. p. 103, and Mél. Biol. IX, p. 172 (under *Sorbus*).

Hab. *Kurile Islands* (*ex* Pallas). *Etorofu*, very common on hillsides, forming stunted

shrubs, a foot to three feet in height in exposed places, as at Rubetsu and Shibetoro, or attaining a height of eight to ten feet in sheltered places, as at Furubetsu and Arimoi.

Distrib. Manchuria, Eastern Siberia along the Ochotsk Sea to Kamtschatka, Saghalin, middle and northern Japan, islands in the Behring Sea, Alaska to the Sierra Nevada and Rocky Mountains (to Colorado), and eastward through British America to Labrador and northern New England.

SAXIFRAGACEÆ.

94. Astilbe Thunbergii, Miq. Prol. Fl. Jap. p. 260; Fr. & Sav. Enum. I, p. 143; Forbes & Hemsley, Index Fl. Sin. p. 266. *Hoteia Thunbergii*, Sieb. & Zucc. Fl. Jap. Fam. Nat. II, p. 367.

Hab. *Etorofu*, at Furubetsu.

Distrib. Japan and central China.

95. Saxifraga fusca, Max. Mél. Biol. VIII, p. 602; Fr. & Sav. Enum. I, p. 146, II, p. 354.

Hab. *Etorofu*, along a shady stream near Tsurubetsu.

Distrib. Common in the island of Yezo, and rarely in the subalpine regions of middle Japan.

The plant is closely related to *Saxifraga punctata*, L., which grows in the subalpine regions of northeastern Asia, extending to Alaska and the Rocky Mountains.

96. Saxifraga reflexa, Hook. Fl. Bor.-Am. I, p. 249, t. 85; Engl. Monog. Saxif. p. 143; A. Gray, Proc. Am. Acad. XX, p. 11. *S. Tilingiana*, Regel in Regel & Til. Fl. Ajan. p. 94; Engl. Monog. p. 142. *S. Sachalinensis*, F. Schm. Fl. Sach. p. 133. *S. Virginiensis*, var. *yezoensis*, Franchet in Bull. de la Soc. Philom. de Paris, avril, 1888.

Hab. *Shikotan*, on rocky cliffs.

I have followed Dr. Gray in referring our plant as well as *S. Tilingiana* to Hooker's *S. reflexa*, which he distinguishes from *S. virginiensis* by the following characters: — "calyx reflexed in or after anthesis, almost free; pedicels all slender and longer than calyx; filaments disposed to be upwardly dilated, sometimes conspicuously so," — *l. c.*, p. 10. There is a great variation in the nature and amount of the pubescence, and in the shape of the leaves, with all gradations between the extremes.

Distrib. Common in the middle and northern parts of Yezo, in southern Kuriles and Saghalin; also in Eastern Siberia about Ajan; and in North America, from Arctic Alaska southward along the northern Rocky Mountains, thence along the Cascades and the Sierra Nevada to southern California.

97. Saxifraga Merkii, Fisch. in Sternb. Rev. Sax. Suppl. I, p. 1, t. 1, f. 3, II, p. 19; Ser. in DC. Prodr. IV, p. 24; Engl. Monog. Sax. p. 208.

Hab. Second Island (*Paramushir*)! (*ex* Max.).

Distrib. About the Baikal Lake, Ajan (Small!), Kamtschatka and the Kurile Islands; as var. *Idsuræi*, Engl., in the alpine district of middle Japan.

98. Saxifraga bronchialis, L. Sp. p. 400; Ledeb. Fl. Ross. II, p. 207; Hook. Fl. Bor.-Am. I, p. 254; Engl. Monog. Sax. p. 215.

Hab. *Shikotan*, on rocky cliffs.

Distrib. Arctic Russia in Europe, and throughout northern Asia to Alaska, and on the Sierra Nevada and Cascade Range, and the Rocky Mountains as far south as New Mexico.

99. **Chrysosplenium kamtschaticum**, Fisch. in DC. Prodr. IV, p. 48; Ledeb. Fl. Ross. II, p. 227; F. Schm. Fl. Sach. p. 134; Max. Mél. Biol. IX, p. 765. *C. oppositifolium*, Cham. in Linnæa, VI, p. 557.

Hab. *Urup!* (*ex* Max.).

Distrib. Extreme Eastern Siberia, Kamtschatka, the Kuriles and Saghalin.

100. **Parnassia palustris**, L. Sp. p. 273; Ledeb. Fl. Ross. I, p. 262; Torr. & Gray, Fl. N. Am. I, p. 148; Miq. Prol. Fl. Jap. p. 261.

Hab. *Urup!* (*ex* Max.). *Etorofu*, in the vicinity of Rubetsu.

Distrib. In the subalpine and subarctic regions of the northern hemisphere.

101. **Hydrangea scandens**, Max. Rev. Hydr. As. Or. p. 16; F. Schm. Fl. Sach. p. 130. *H. cordifolia*, *petiolaris* and *bracteata*, Sieb. & Zucc. Fl. Jap. p. 113, t. 59, f. II, p. 106, t. 54, p. 176, t. 92. *H. petiolaris*, Fr. & Sav. Enum. I, p. 153.

Hab. *Etorofu*, in deciduous woods near Furubetsu.

This polymorphous species is strictly insular, so far as we are informed, dispersed from the subalpine regions of Kiusiu to the southern part of Saghalin and the Kuriles. Several varieties have been proposed by different authors, but in nature there is such a gradual transition between them as to make their use almost impossible.

102. **Ribes triste**, Pall. in Nov. Act. Petrop. X, p. 378; Ledeb. Fl. Ross. II, p. 198; Max. Mél. Biol. IX, p. 235. *R. melancholium*, Sievers *ex* Pallas *l. c.* *R. propinquum*, Turcz. in Bull. Mosc. (1840) p. 70; Max. Prim. Fl. Amur. p. 119. *Ribes rubrum*, var. *propinquum*, Trautv. & Mey. Fl. Ochot. p. 40; Reg. & Til. Fl. Ajan. p. 93.

Hab. *Kurile Islands!* (*ex* Turcz., Max.).

Distrib. Eastern Siberia about the Ochotsk Sea to arctic Siberia and to the Baikal region; also in northern Manchuria, and in the Kurile Islands.

CRASSULACEÆ.

103. **Sedum Rhodiola**, DC. Prodr. III, p. 401; Ledeb. Fl. Ross. II, p. 179; Reg. & Til. Fl. Ajan. p. 89; A. Gray, Manual, p. 172; Max. Mél. Biol. XI, p. 734.

Hab. *Kurile Islands* (*ex* Reg. & Tiling). *Urup!* (Wrangell). *Shikotan*, on rocky cliffs along the harbor. *Etorofu*, at Tsurubetsu.

This polymorphous species is widely distributed in the arctic and alpine regions of Europe, Asia and North America; especially common on marine cliffs in high latitudes.

104. **Sedum kamtschaticum**, Fisch. in Ind. Sem. Hort. Petrop. VII, p. 54; Ledeb. Fl. Ross. II, p. 182; F. Schm. Fl. Sach. p. 132; Max. Mél. Biol. XI, p. 759. *Sedum hybridum*, A. Gray, Bot. Jap. p. 427.

Hab. *Shikotan*, on rocky cliffs about the harbor.

Distrib. Eastern Siberia, Kamtschatka, Manchuria, Saghalin, Japan, Corea and China.

ONAGRARIEÆ.

105. Epilobium Behringianum, Haussk. Monog. Epilob. p. 277. *E. origanifolium*, Cham. & Schlecht. in Linnæa, II, p. 553.

Hab. Kuriles; Urup (hb. Petrop. *ex* Haussk.).

Distrib. Sitka through the Aleutian Islands to Kamtschatka and the Kurile Islands.

106. Epilobium Bongardi, Haussk. Monogr. Epilob. p. 278. *E. roseum*, Bong. Veg. Sitcha in Mém. Ac. Petrop. (1833) VI, p. 135; Torr. & Gray, Fl. N. Am. I, p. 489; Ledeb. Fl. Ross. II, p. 111 (in part). *E. Hornemanni*, Bong. *l. c.* p. 136; Ledeb. *l. c.* p. 112 (in part).

Hab. Urup (hb. Petrop., *ex* Haussk.).

Distrib. Insular,— Sitka, through the Aleutian Islands to Kamtschatka and the Kurile Islands.

107. Epilobium latifolium, L. Sp. p. 347; Ledeb. Fl. Ross. II, p. 106; Torr. & Gray, Fl. N. Am. I, p. 487; Trautv. & Mey. Fl. Och. p. 38; Clarke in Hook. Fl. Brit. Ind. II, p. 583.—Var. **kamtschatica**, Haussk. *l. c.* p. 191. *E. Kamtschaticum*, Led. in Nova Act. Petrop. XI, p. 370, t. 6.

Hab. Kuriles (Vahl. in hb. Willd.). *Urup!* (*ex* Max., Haussk.).

Distrib. The species is widely distributed in the arctic and northern temperate regions of Asia, North America, and the extreme north of Europe; and in the alpine districts of West Himalaya, and of western North America to Colorado and California.

108. Epilobium lactiflorum, Haussk. Monog. p. 158.

Hab. Kurile Islands (hb. Fisch. *ex* Haussk.).

Distrib. Scandinavia, Iceland, Greenland, Labrador to Sitka, extending south into the Lake region and the White and Rocky mountains; Kamtschatka and the Kuriles.

109. Epilobium angustifolium, L. Sp. p. 347; Ledeb. Fl. Ross. II, p. 105; Torr. & Gray, Fl. N. Am. I, p. 487; Trautv. & Mey. Fl. Och. p. 37; Reg. & Til. Fl. Ajan. p. 88; F. Schm. Fl. Sach. p. 129; Haussk. Monog. p. 37. *E. spicatum*, Lam. Fl. Fr. p. 1077; Fr. & Sav. Enum. I, p. 168.

Hab. Etorofu, at Furubetsu and Shibetoro. *Urup* (leg. Mertens, *ex* Haussk.).

Distrib. Widely spread in the arctic and temperate regions of Europe, Asia and North America.

110. Circaea alpina, L. Sp. p. 9; Ledeb. Fl. Ross. II, p. 114; Hook. Fl. Bor.-Am. I, p. 215; A. Gray, Bot. Jap. p. 389; F. Schm. Fl. Sach. p. 129; Fr. & Sav. Enum. I, p. 170.

Hab. Shikotan. Etorofu, at Furubetsu.

Distrib. Europe, northern Africa, and in the cool temperate and alpine regions of Asia and North America.

UMBELLIFERÆ.

111. Aegopodium alpestre, Ledeb. Fl. Alt. I, p. 354, Fl. Ross. II, p. 248; Trautv. & Mey. Fl. Ochot. p. 43; Reg. & Til. Fl. Ajan. p. 96; Max. Prim. Fl. Amur. p. 124; F. Schm. Fl. Sach. p. 135.

Hab. *Shikotan*, in grassy places, on top of cliffs.

Distrib. From the Altai and Baikal regions of Siberia to the Ochotsk district, and northern Manchuria; Saghalin, and Yezo (Sapporo, Prov. Ishikari; Saruru Sando, Prov. Hidaka; Otsuishi, Prov. Nemuro).

112. **Anthriscus sylvestris**, Hoffm. Umbel. pp. 40, 46, t. I, f. 19; Ledeb. Fl. Ross. p. 346; A. Gray, Bot. Jap. p. 390; Fr. & Sav. Enum. I, p. 183. *Chærophyllum sylvestre*, L.; Georgi, Beschr. d. Russ. R. III, 4, p. 855. *Anthriscus nemorosa*, F. Schm. Fl. Sach. p. 140.

Hab. *Kurile Islands* (Steller *ex* Georgi). *Etorofu*, at Furubetsu, and Shana.

Distrib. Europe, northern Africa, northern Asia, northeastern China and Japan.

113. **Ligusticum scoticum**, L. Sp. p. 250; Ledeb. Fl. Ross. II, p. 286; Max. Mél. Biol. IX, p. 249; Coulter & Rose, Rev. N. Am. Umb. p. 85. *Haloscias scoticum*, Fries Summa Veget. Scand. I, p. 180; Max. Fl. Amur. p. 126; F. Schm. Fl. Sach. p. 135.

Hab. *Etorofu*, at Tsurubetsu.

Distrib. The coast regions of the arctic and north temperate regions of Europe, Asia and North America.

114. **Pleurospermum austriacum**, Hoffm. Umb. p. VIII; DC. Prodr. IV, p. 244; Ledeb. Fl. Ross. II, p. 360; Turcz. Fl. Baic.-Dah. I, p. 512; Max. Prim. Fl. Amur. p. 130; Forbes & Hemsley, Index Fl. Sin. p. 333. *P. kamtschaticum*, Hoffm. Umbel. p. X; Ledeb. Fl. Ross. II, p. 361; F. Schm. Fl. Sach. p. 140; Fr. & Sav. Enum. I, p. 186. *P. uralense*, Hoffm. *l. c.*

Hab. *Etorofu*, at Rubetsu.

Distrib. Central and eastern Europe, across southern Siberia to Manchuria and northeastern China, Saghalin, northern and middle Japan and Kamtschatka.

115. **Angelica anomala**, Lallem. in Ind. Sem. Hort. Petrop. IX, p. 57; Regel, Tent. Fl. Uss. p. 70; F. Schm. Fl. Sach. p. 137 (excl. syn. *A. japonica*). *A. montana*, var. *angustifolia*, Ledeb. Fl. Ross. II, p. 295. *A. sachalinensis*, Max. Prim. Fl. Amur. p. 127.

Hab. *Etorofu*, in grassy places on the marine terraces near Shana and Shibetoro.

Distrib. From the Baikal region of Siberia to Manchuria and northeastern China; also in southern Saghalin and Yezo: Sempoji, Prov. Kushiro.

116. **Coelopleurum Gmelini**, Ledeb. Fl. Ross. II, p. 361; A. Gray, Pl. Jap. p. 312, Bot. Jap. p. 391; F. Schm. Fl. Sach. p. 136; Coulter & Rose, Rev. N. Am. Umbel. p. 90. *Archangelica Gmelini*, DC. Prodr. IV, p. 170; Hook. Fl. Bor.-Am. I, p. 267; Fr. & Sav. Enum. I, p. 188. *Angelica maculata*, Turcz. Bull. Mosc., 1840, p. 72. *Physolophium saxatile*, Trautv. & Mey. Fl. Och. p. 44; F. Schm. in Max. Fl. Amur. p. 126.

Hab. *Kurile Islands* (*ex* Turcz.).

Distrib. Coast regions of Manchuria, Eastern Siberia, Kamtschatka, Saghalin, and northern and middle Japan; Alaska, the Pacific and Atlantic coasts of British America and also New England and Greenland.

117. **Heracleum lanatum**, Michx. Fl. Bor.-Am. I, p. 166; A. Gray, Bot. Jap. p. 391;

Max. Fl. As. Or. Frag. p. 23; Forbes & Hemsley, Index Fl. Sin. p. 336. *Heracleum dissectum*, Ledeb. Fl. Alt. I, p. 301. *H. barbatum*, Ledeb. Fl. Alt. I, p. 300; F. Schm. in Max. Fl. Amur. p. 129, Fl. Sach. p. 138; Fr. & Sav. Enum. I, p. 189.

Hab. *Kurile Islands* (*ex* Pallas, Georgi). *Etorofu*, at Furubetsu.

Distrib. From the Altai region of Siberia to central and northern China, Manchuria, Japan, Saghalin, Eastern Siberia and Kamtschatka, and widely spread in the subarctic and temperate regions of North America, especially along the high mountains towards the south.

ARALIACEÆ.

118. Aralia racemosa, L. Sp. p. 273; Torr. & Gray, Fl. N. Am. I, p. 646.—Var. **sachalinensis**, Regel, Gartenflora, 1864, p. 100, t. 432, Ind. Sem. Hort. Petrop., 1864, p. 22; F. Schm. Fl. Sach. p. 141. *Aralia cordata*, Thunb. Fl. Jap. p. 127; Fr. & Sav. Enum. I, p. 191. *Aralia edulis*, Sieb. & Zucc. Fl. Jap. I, p. 57, t. 25.

Hab. *Etorofu*, in roadside thickets near Furubetsu.

Distrib. Southern Saghalin and Japan. The plant is very common in the island of Yezo and in the northern provinces of the main island. Toward the south it is chiefly met with in a cultivated state.

Our plant differs from the American one in its leaflets being generally simply serrate, and its young fruits turbinate. Its styles have a less tendency to diverge at first, though they are seen recurved regularly in ripened fruits. The flowers may be a little larger in the Japanese plant, and are said to be sometimes 6-merous. In other characters the two plants can scarcely be distinguished in dried specimens.

In North America the plant grows in rich woodlands on the Atlantic side from Canada to the mountains of Georgia, and it is also found at the base of the Rocky Mountains.

119. Acanthopanax ricinifolium, Seeman in Journ. Bot., 1868, p. 140, and Rev. Heder. p. 86; Forbes & Hemsley, Index Fl. Sin. p. 340. *Panax ricinifolium*, Sieb. & Zucc. Fl. Jap. Fam. Nat. I, p. 91. *Kalopanax ricinifolium*, Miq. in Ann. Mus. Bot. Lugd.-Bat. I, p. 16; F. Schm. Fl. Sach. p. 140. *Brassaiopsis ricinifolia*, Seeman in Journ. Bot., 1864, p. 291.

Hab. *Etorofu*, in sheltered valleys near Furubetsu, and at Arimoi.

Distrib. Southwestern Saghalin, Japan, Corea and China.

CORNACEÆ.

120. Cornus canadensis, L. Sp. p. 117; Torr. & Gray, Fl. N. Am. I, p. 652; Ledeb. Fl. Ross. II, p. 378; A. Gray, Bot. Jap. p. 391.

Hab. *Kurile Islands* (Merk. *ex* Rudolph). *Etorofu*, at Furubetsu, Arimoi and Shibetoro. *Kunashiri* (G. Mori).

Distrib. Subarctic and alpine regions of North America and northeastern Asia, as far south as the eastern side of Corea and middle Japan.

121. Cornus suecica, L. Sp. p. 118; Torr. & Gray, Fl. N. Am. I, p. 653; Ledeb. Fl. Ross. II, p. 377; A. Gray, Bot. Jap. p. 391; Fr. Schm. Fl. Sach. p. 141.

Hab. *Shikotan*, in grassy places on the top of cliffs.

Distrib. Arctic and northern Europe, Asia and North America.

GAMOPETALÆ.

CAPRIFOLIACEÆ.

122. Sambucus racemosa, L. Sp. p. 270; Ledeb. Fl. Ross. II, p. 383; A. Gray, Synop. Fl. I, p. 8; Max. Prim. Fl. Amur. p. 135; Miq. Prol. Fl. Jap. p. 135. *S. pubens*, Michx. Fl. Bor.-Am. I, p. 181. *S. pubescens*, Pers. Syn. I, p. 328. *S. racemosa*, var. *pubens*, Trautv. & Mey. Fl. Och. p. 46.

Hab. *Etorofu*, at Furubetsu.

Distrib. Temperate regions of Europe, northern and eastern Asia, and North America.

123. Viburnum Opulus, L. Sp. p. 268; Ledeb. Fl. Ross. II, p. 384; Max. Prim. Fl. Amur. p. 135, and Mél. Biol. X, p. 670; A. Gray, Synop. Fl. I, p. 10; Fr. & Sav. Enum. I, p. 199.

Hab. *Etorofu*, in the roadside thicket near Shana.

Distrib. Temperate and subarctic regions of Europe; northern Asia, northern China, northern and middle Japan; and in North America, from Alaska to Oregon on the western coast, and New Brunswick to Pennsylvania on the east.

124. Linnaea borealis, Gronov.; Ledeb. Fl. Ross. II, p. 392; A. Gray, Synop. Fl. I, p. 13; Max. Prim. Fl. Amur. p. 139; F. Schm. Fl. Sach. p. 143.

Hab. *Shimushu* (Prof. J. Milne, *ex* James Bisset). *Etorofu*, at Nobori in the region of *Pinus pumila*.

Distrib. Arctic and alpine regions of northern Europe, northern Asia, and North America.

This plant was also collected on Mt. Poroshiri in the central part of Yezo by S. Tanouchi in 1882.

125. Lonicera caerulea, L. Sp. p. 174; Ledeb. Fl. Ross. II, p. 390; A. Gray, Synop. Fl. I, p. 15. *L. cærulea*, var. *villosa*, Torr. & Gray, Fl. N. Am. II, p. 9; Herder, Pl. Radd. III, p. 18, t. 3, f. 3; Max. Mél. Biol. X, p. 75.

Hab. *Etorofu*, at Furubetsu and Shibetoro.

Distrib. Marshy places of the arctic and subalpine regions of Europe, northern Asia, and North America.

A villose form, to which my Kurile specimens belong, is found in northern Japan, Saghalin, Kamtschatka, northeastern Manchuria, Dahuria, and across Siberia to northern Russia; and is also dispersed in British America and in the Sierra Nevada.

126. Lonicera Maximowiczii, Rupr. Pl. Max. n. 33, in Bull. phys. math. Peterb. XV; Max. Prim. Fl. Amur. p. 137, and Mél. Biol. X, p. 60; Herd. Pl. Radd. III, p. 14, t. II, f. 6, and Addenda, p. 18; F. Schm. Fl. Sach. p. 142 (var. *sachalinensis*).

Hab. *Shikotan*, on hillsides. *Etorofu*, at Furubetsu.

Distrib. In the mountain woods of eastern Manchuria, Saghalin and Yezo. In the island of Yezo I have found this plant thus far only in places of a volcanic origin, where

the subsoil is entirely composed of disintegrated lava; as at Chitose, Prov. Iburi, Nakaware, Prov. Nemuro, and Shari, Prov. Kitami.

According to Prof. Maximowicz, it is said to be closely related to *L. conjugialis*, Kellogg, of California.

127. Lonicera Chamissoi, Bunge in Kirol. Lonic. d. russ. R. p. 28; Max. Fl. Amur. p. 136; Herd. Pl. Radd. III, p. 19, t. 2, f. 1, 2, and Add. and Emend. p. 25; Max. Mél. Biol. x, p. 60. *Lonicera nigra*, Ledeb. Fl. Ross. II, p. 389 (in part).

Hab. *Kurile Islands!* (herb. Fisch.). *Etorofu*, in grassy places on the top of hills, at Shibetoro.

Distrib. Kamtschatka, Eastern Siberia on the Ochotsk border, northeastern Manchuria, Saghalin and Yezo: Mt. Poroshiri, Prov. Tokachi (S. Tanouchi, 1882).

128. Diervilla Middendorffiana, Carr. in Rev. Hort., 1853, p. 306, 1854, p. 261, t. 14; Max. Mél. Biol. XII, p. 482. *Calyptrostigma Middendorffianum*, Trautv. & Mey. in Bull. phys. math. Pétersb. XIII, p. 220, and Fl. Och. p. 46, t. 25, f. a, b; Max. Fl. Amur. p. 135; F. Schm. Fl. Sach. p. 142; Herder, Pl. Radd. III, Add. and Emend. I, p. 12.

Hab. *Kurile Islands!* (Max.).

Distrib. Eastern Siberia about Ochotsk, northeastern Manchuria, Saghalin, northern and middle Japan.

RUBIACEÆ.

129. Rubia tatarica, F. Schm. Fl. Sach. p. 143. *Galium tataricum*, Trev.; Ledeb. Fl. Ross. II, p. 410.—Var. **grandis**, F. Schm., *l. c.*; Max. Mél. Biol. IX, p. 266; Herd. Pl. Radd. III, Add. and Emend. II, p. 4. *G. jezoense*, Miq. Prol. p. 276.

Hab. *Shikotan*, in wet grassy places along the beach. *Etorofu*, at Rausu.

Distrib. Yezo, Saghalin and Manchuria.

The typical form is found in the steppes of middle and southern Russia, extending eastward to Songaria.

130. Galium verum, L. Sp. p. 107; Ledeb. Fl. Ross. II, p. 414; Herder, Pl. Radd. III, p. 32; Max. Mél. Biol. IX, p. 265; Fr. & Sav. Enum. I, p. 215.

Hab. *Shikotan*, in grassy places along the beach. *Etorofu*, at Tsurubetsu and Shibetoro.

Distrib. Europe, northern Africa, northern and eastern Asia and Himalaya.

131. Galium kamtschaticum, Steller in Rœm. & Schult. Syst. III, Mant. p. 186; A. Gray, Proc. Am. Acad. XIX, p. 80, Synop. Fl. I, p. 37. *Galium obovatum*, Ledeb. Fl. Ross. II, p. 412 (not HBK.); Max. Mél. Biol. IX, p. 262.

Hab. *Etorofu*, at Furubetsu.

Distrib. Saghalin, northern and middle Japan in alpine woods; Kamtschatka; the Aleutian Islands to the mountains of Oregon and Washington, and also in those of lower Canada and New England.

132. Asperula odorata, L. Sp. p. 103; Ledeb. Fl. Ross. II, p. 400; A. Gray, Bot. Jap. p. 393; Max. Mél. Biol. IX, p. 267; F. Schm. Fl. Sach. p. 144; Fr. & Sav. I, p. 211; Herder, Pl. Radd. III, Add. and Emend. II, p. 5.

Hab. *Etorofu*, in sheltered woods in the vicinity of Furubetsu.

Distrib. Europe; northern Africa to southwestern Siberia and middle Asia; in alpine woods of middle Japan, and northward to Yezo, Saghalin and the southern Kuriles.

COMPOSITÆ.

133. **Solidago Virgaurea**, L. Sp., p. 880; Ledeb. Fl. Ross. II, p. 493; Max. Prim. Fl. Amur. p. 149; Hook. f. Fl. Brit. Ind. III, p. 245; A. Gray, Synop. Fl. I, p. 148; Fr. & Sav. Enum. I, p. 228.

Hab. *Shikotan*. *Etorofu*, at Furubetsu and Shibetoro.

Distrib. Europe, northern and eastern Asia, Himalaya and North America.

134. **Aster Glehni**, F. Schm. Fl. Sach. p. 146; Fr. & Sav. Enum. I, p. 223.

Hab. *Shikotan*, on hillsides.

Distrib. In Japan, from Kiusiu to Yezo and the southern Kuriles, and Saghalin.

135. **Erigeron salsuginosus**, A. Gray, Proc. Am. Acad. XVI, p. 93, Synop. Fl. I, p. 208. *Aster salsuginosus*, Richards. in Franklin Journ. Add. ed. 2, p. 32; Hook. Bot. Mag. t. 4942; Ledeb. Fl. Ross. II, p. 474. *Aster unalaschensis*, Less. *ex* Bong. Veg. Sitch. p. 148. *A. peregrinus*, Herder, Pl. Radd. III, 2, p. 10 (partly). *A. japonicus*, Less. in DC. Prodr. V, p. 228; A. Gray, Pl. Jap. p. 314. *Inula dubia*, Thunb. Fl. Jap. p. 318. *Erigeron Thunbergii*, A. Gray, Bot. Jap. p. 395, and var. (?) *glabratum*, A. Gray, *l. c.*; Fr. & Sav. Enum. I, p. 227.

Hab. *Urup !* (*ex* Max.). *Shikotan*, in moist places on the side of a cliff.

Dr. Gray, in his notes on the Japanese plants collected in the Perry expedition, called our attention to a close affinity of the Simoda plant to *Aster unalaschensis*. Later, he made a remark on a larger and less hairy form collected by J. Small at Cape Shiriyazaki in the strait of Tsugaru, that it is the Japanese analogue of the Californian *Erigeron glaucus*. Examination of these original specimens in connection with my own collected on the eastern coast of Yezo and in Shikotan, shows a distinct similarity between them in all their important characters. No two specimens, however, are alike in the degree of the pubescence on their stalks and involucres. The Shikotan specimen is, for instance, almost smooth in its involucre, being simply ciliate on the margins; while in the Simoda plant it is densely villose, though not lanose. There is also some difference in the color of the pappus. All the specimens collected in the main island of Japan have a reddish, cinnamon-colored pappus; while those of the northern islands have a light, yellowish-brown one. But these differences are also seen to occur among a large number of the American specimens of *E. salsuginosus* in the Gray Herbarium.

The specimens collected at the Shiriyazaki have a general character just about intermediate between *E. glaucus* and *E. salsuginosus*. My Kurile and Yezo specimens, on the other hand, correspond very well with the typical *salsuginosus;* and through these northern plants one may safely refer those growing in the main island to the species under consideration, probably as its Japanese variety.

Distrib. Middle and northern Japan, the Kurile Islands to Alaska, thence southward along the higher mountains to California, Utah and New Mexico.

136. Anaphalis margaritacea, Benth. & Hook. Gen. Pl. II, p. 303; Gray, Synop. Fl. I, p. 233; Max. Mél. Biol. XI, p. 235. *Gnaphalium margaritaceum*, L.; Herd. Pl. Radd. III, 2, p. 102; Fr. & Sav. Enum. I, p. 242. *Antennaria margaritacea*, R. Br.; Ledeb. Fl. Ross. II, p. 613. *Antennaria cinnamomea*, Miq. Prol. p. 110.

Hab. Shikotan. Etorofu, at Furubetsu.

Distrib. Widely distributed throughout the cool temperate region of North America, extending northwestward to Alaska and the Aleutian Islands, and descending on the west coast along the higher mountains to Colorado and California. In Asia, it spreads over Kamtschatka, Saghalin, Japan and Manchuria; and as var. *cinnamomea* in Ceylon, Himalaya, upper Birma, and northwestern China; also in Manchuria and Japan, mixed with other forms.

137. Achillea Millefolium, L. Sp. p. 899; Ledeb. Fl. Ross. II, p. 531; A. Gray, Synop. Fl. I, p. 363.—Var. **occidentalis**, DC. Prodr. VI, p. 24; Herder, Pl. Radd. III, 2, p. 36. *A. borealis*, Bong. Veg. Sitcha, p. 149.

Hab. Kurile Islands (Merk. *ex* Herder).

This variable plant is very widely distributed throughout the subarctic and cool temperate regions of the northern hemisphere. In Japan, however, the plant has not yet been found in a wild state. A few plants were found around a new pasture ground in Sapporo in 1880. It is highly probable that they had been introduced there mixed with the seeds of grasses from America.

138. Achillea sibirica, Ledeb. in Ind. Sem. H. Dorpat., 1811, Fl. Ross. II, p. 528; Herd. Pl. Radd. III, 2, p. 37; Fr. & Sav. Enum. I, p. 233. *Ptarmica mongolica*, DC. Prod. VI, p. 22; Max. Prim. Fl. Amur. p. 154; F. Schm. Fl. Sach. p. 147. *A. multiflora*, Hook. Fl. Bor.-Am. I, p. 318.

Hab. Etorofu, at Furubetsu, Rubetsu and Shana.

Distrib. From the Baikal district of Siberia to Manchuria, northern China and Corea; and throughout the larger islands of Japan to Saghalin, Eastern Siberia, Kamtschatka and the Aleutian Islands; extending from Alaska eastward to the Saskatchewan.

The American *A. multiflora* can scarcely be distinguished from our *A. sibirica*, which is quite variable in size and the color of its rays and also in the shape of its leaves.

139. Achillea Ptarmica, L. Sp. p. 898; A. Gray, Synop. Fl. I, p. 363. *Ptarmica vulgaris*, Clus.; Ledeb. Fl. Ross. II, p. 529.—Var. **speciosa**, Herder, Pl. Radd. III, 2, p. 39. *A. speciosa*, DC. Prod. VI, p. 23; Ledeb. Fl. Ross. II, p. 530. *Ptarmica vulgaris*, F. Schm. Fl. Sach. p. 147.

Hab. Etorofu, at Furubetsu, Shibetoro and Rubetsu.

Distrib. Europe, northern Asia, and North America (New Brunswick). The variety in Kamtschatka and islands in the Behring Sea, across central and southern Siberia to middle Russia; also in Saghalin and the northern and middle provinces of Yezo.

140. Achillea macrocephala, Rupr. Fl. Samoj. in Beitr. zur Pfl. Kde. des Russ. R. II, p. 41; Trautv. Stirp. Sib. Coll. Bin. p. 450. *Ptarmica grandiflora*, DC. Prodr. VI, p. 23; Ledeb. Fl. Ross. II, p. 531.

Hab. Urup ! (*ex* Max.).

Distrib. Kamtschatka, the Kurile Islands and "Eastern Siberia" (*fide* Trautv.).

This plant is closely related to the preceding species, with which Herder proposed even to unite it. According to the descriptions given by De Candolle and Ruprecht, it differs from *A. Ptarmica*, var. *speciosa*, in the following characters:—teeth of the leaves more prominent and not incurvedly appressed; peduncle elongated; rays 8–9, obovate-elliptical; chaff on the receptacle oblong, serrate from the middle upward, fuscous, and subtrifid at the apex.

141. **Chrysanthemum arcticum**, L. Sp. ed. 2, p. 889; Hook. Fl. Bor.-Am. I, p. 319; A. Gray, Synop. Fl. I, p. 365. *Leucanthemum arcticum*, DC. Prodr. VI, p. 45; Ledeb. Fl. Ross. II, p. 541; Max. Prim. Fl. Amur. p. 155; Fr. & Sav. Enum. I, p. 234.

Hab. *Urup!* (*ex* Max.). *Etorofu*, on rocky cliffs at Tsurubetsu.

Professor Maximowicz kindly informs me that his Urup specimen is of "the large-headed form with pinnatifid leaves of Hakodate." My Etorofu plant is also of the same form.

Distrib. In northeastern Asia: coast regions of Manchuria, Saghalin, northern Japan; all around the Ochotsk Sea, Kamtschatka and adjacent islands to the Behring Strait. In North America, from arctic Alaska along the arctic shores to Hudson Bay; also in eastern Lapland, and arctic Russia.

142. **Matricaria ambigua**, Ledeb. Fl. Alt. IV, p. 118, and Fl. Ross. II, p. 547 (under *Pyrethrum*). *Chamœmelum limosum*, Max. Prim. Fl. Amur. p. 156. *Chamœmelon tetragonospermum*, F. Schm. Fl. Sach. p. 148. *Tripleurospermum ambiguum*, Fr. & Sav. Enum. I, p. 236. *Tripleurospermum inodorum*, var. *ambiguum*, Herder, Pl. Radd. III, 2, p. 42.

Hab. *Shikotan*, in grassy places about the harbor.

Distrib. Northern Europe and Asia, extending southward to southwestern Siberia and the Altai region, and to Manchuria, Saghalin and northern Japan; according to Herder also at Kotzebue Sound in Alaska.

143. **Matricaria discoidea**, DC. Prodr. VI, p. 50; Ledeb. Fl. Ross. II, p. 544; A. Gray, Synop. Fl. I, p. 364; Reg. & Til. Fl. Ajan. p. 102.

Hab. *Urup!* (*ex* Max.).

Distrib. Eastern Siberia in the Ochotsk region, Kamtschatka, and the Kurile Islands; through the Aleutian Islands and Alaska to western California, thence to Montana; now naturalized in the Atlantic states of North America, and in northern and middle Europe.

144. **Artemisia laciniata**, Willd. Sp. III, p. 1843; Besser, Tent. Abrot. p. 40; Ledeb. Fl. Ross. II, p. 581; Max. Mél. Biol. VIII, p. 530.—Var. **laciniata**, Max. *l. c.!*

Hab. *Shikotan*, on cliffs along the harbor.

Distrib. In Siberia from the Altai to the Ochotsk region; also in Dahuria, Mongolia, eastern Manchuria, and the southern Kuriles.

145. **Artemisia glomerata**, Ledeb. in Mém. Acad. Petersb. V, p. 564, Fl. Ross. II, p. 588; Bess. Abrot. p. 63; Max. Mél. Biol. VIII, p. 532; A. Gray, Synop. Fl. I, p. 370. *A. leontopodioides*, Fisch. *ex* Besser, Abrot. p. 63.

Hab. *Kurile Islands!* (Pallas *ex* Max.).

Distrib. Extreme northeastern Asia: Ochotsk region, Kamtschatka, the Kuriles and Tschuktches-land; also in arctic Alaska.

146. Artemisia norvegica, Fries; Besser, Abrot. p. 76; Max. Mél. Biol. VIII, p. 533; A. Gray, Synop. Fl. I, p. 371.—Var. **pacifica**, A. Gray, *l. c.* *A. longepedunculata*, Rudolphi ex Bess. Abrot. p. 77; Ledeb. Fl. Ross. II, p. 591. *A. arctica*, Less. in Linnæa, VI, p. 213; Ledeb. *l. c.* p. 591. *A. Chamissoniana*, Bess. in Hook. Fl. Bor.-Am. I, p. 324. *A. arctica*, var. *sachalinensis*, F. Schm. Fl. Sach. p. 150.

Hab. *Kurile Islands* (*ex* Turcz.).

Distrib. Eastern Siberia, northern Manchuria, Saghalin, Kamtschatka, and the Aleutian Islands to arctic Alaska. The typical form is found in the alpine region of Norway, in the northern Ural, and in the alpine and subalpine regions of western North America, as far south as California and southern Colorado.

147. Artemisia Stelleriana, Bess. Abrot. p. 79, t. 5; Ledeb. Fl. Ross. II, p. 592; Max. Mél. Biol. VIII, p. 534; F. Schm. Fl. Sach. p. 150; A. Gray, Synop. Fl. I, p. 371; Franchet, in Bull. Soc. Philom. Paris, avril, 1888. *A. Stelleriana*, var. *vesiculosa*, Fr. & Sav. Enum. II, p. 402. *A. chinensis*, Pursh, Fl. Bor.-Am. II, p. 521.

Hab. *Etorofu*, at Rausu.

Distrib. Along the coast of Kamtschatka, Saghalin and northern Japan; and also about the mouth of the Amoor in Manchuria. Found wild at Lynn Beach, Mass., North America, and also in Sweden (*fide* Areschoug, Fl. Dan., fasc. 51, t. 3045). According to Pursh, also on the northwestern coast of North America.

148. Artemisia vulgaris, L. Sp. p. 848; Bess. Abrot. p. 51; Ledeb. Fl. Ross. II, p. 585; Herd. Pl. Radd. III, 2, p. 74; Max. Mél. Biol. VIII, p. 535; A. Gray, Synop. Fl. I, p. 372; Fr. & Sav. Enum. I, p. 239.

Hab. *Shikotan.* *Etorofu*, common along the roadside thickets. *Shimushu* (Akakabe).

Distrib. Widely distributed in temperate Europe, Asia and western North America. Also found in the mountainous districts of India, Siam and Java. Naturalized in Canada and the Atlantic States of North America.

149. Artemisia sericea, Weber, in Stechm. Art. p. 16; Ledeb. Fl. Ross. II, p. 595; F. Schm. Fl. Sach. p. 150; Max. Mél. Biol. VIII, p. 537.

Hab. *Shikotan*, on rocky cliffs along the harbor.

All the specimens I have collected were in a sterile condition. The plant is suffruticose at the base and ascending, and is densely appressed-silky. The leaves are all petioled and coincide exactly with the sterile specimen of *A. sericea* from Dahuria (Fischer) in the Gray Herbarium!

Distrib. "From the R. Volga through Siberia to the R. Aldan in E. Siberia, Dahuria, Saghalin," and in the southern Kuriles.

150. Petasites japonicus, Miq. Prol. Fl. Jap. p. 380 (1867); Fr. & Sav. Enum. I, p. 220. *P. japonicus*, F. Schm. Fl. Sach. p. 145 (1868). *Tussilago Petasites*, Thunb. Fl. Jap. p. 314. *Nardosmia japonica*, Sieb. & Zucc. Fam. Nat. II, p. 57, n. 615. *Petasites spurius*, Miq. Prol. p. 100. *P. albus*, Gray, Pl. Jap. p. 314.—— Pallas, N. nord. Beitr. IV, p. 124.

Hab. From *Mutowa*, the fourteenth island, southward (*ex* Pallas). *Shikotan*, on sheltered hillsides. *Etorofu*, in the vicinity of Furubetsu.

The plant grows throughout Japan and also in Saghalin. In a rich sheltered valley of northern Japan it often attains such a large size as to enable an average-sized person to walk under its spreading leaf without stooping. The description given by Pallas of the Kurile plant coincides perfectly with that of ours, and there is no doubt of their being the same.

151. Senecio Pseudo-Arnica, Less. in Linnæa, VI, p. 240; Ledeb. Fl. Ross. II, p. 642; A. Gray, Synop. Fl. I, p. 384; Max. Mél. Biol. VIII, p. 15; Fr. & Sav. Enum. II, p. 407.

Hab. *Etorofu*, at Rausu.

Distrib. Coast regions of Manchuria, Saghalin, Yezo, Eastern Siberia, Kamtschatka and islands in the Behring Sea; Alaska, and in Newfoundland to Grand Manan.

152. Senecio palmatus, Pall. Iter. III, p. 321; Ledeb. Fl. Ross. II, p. 636; Max. Prim. Fl. Amur. p. 166, Mél. Biol. VIII, p. 15. *S. cannabifolius*, Less. in Linnæa, VI, p. 242.

Hab. *Shumshu!* (*ex* Max., Aino name, *Orumukutu*). *Shikotan*, on hillsides.

Distrib. Eastern Siberia, Manchuria, Saghalin, northern and middle Japan, Kamtschatka and also at Sitka (*ex* Herder).

153. Senecio cacaliaefolius, Schultz Bip. in Flora, 1845, p. 50; Max. Mél. Biol. VIII, p. 14. *S. cacaliæformis*, Reichb. f., Ic. Fl. Germ. XVI (1854), p. 43, t. 977; Fr. & Sav. Enum. I, p. 247. *Ligularia sibirica*, Cass.; Ledeb. Fl. Ross. II, p. 620. *L. speciosa*, Fisch. & Mey. Ind. Sem. H. Petrop. V, p. 38.

Hab. *Shikotan*, on hillsides. *Etorofu*, at Rubetsu.

Distrib. Arctic and alpine regions of Europe; Siberia to the Ochotsk region, Dahuria, Manchuria, northern China and Japan.

154. Senecio sagittatus, Schultz Bip. in Flora, 1845, p. 498; Max. Mél. Biol. IX, p. 292. *Cacalia hastata*, L.; Ledeb. Fl. Ross. II, p. 626; A.Gray, Bot. Jap. p. 395; Herd. Pl. Radd. III, 2, p. 107 (excl. pl. Sitka, *fide* Gray).

Hab. *Etorofu*, at Furubetsu.

Distrib. Kamtschatka and adjacent islands; throughout Siberia to northern and eastern Russia in Europe, Dahuria, Mongolia, Manchuria, Corea, and middle and northern Japan and Saghalin.

155. Senecio davuricus, Schultz Bip. in Flora, 1845, p. 499; Max. Mél. Biol. IX, p. 296. *Cacalia auriculata*, DC. Prod. VI, p. 329; Max. Prim. Fl. Amur. p. 165; Ledeb. Fl. Ross. II, p. 627.—Var. **kamtschaticus**, Max. *l. c.*

Hab. *Shumshu!* (*ex* Max., Aino name, *Hobenakina*).

Distrib. Kamtschatka, the Ochotsk district, Yezo, Saghalin, and Manchuria to eastern Dahuria.

156. Cnicus kamtschaticus, Max. Mél. Biol. IX, p. 310; A. Gray, Synop. Fl. I, p. 399. *Cirsium kamtschaticum*, Ledeb. in DC. Prodr. VI, p. 644, Fl. Ross. II, p. 736; Herder, Pl. Radd. III, 4, p. 4.

Hab. *Shumshu!* and *Paramushir!* (*ex* Max., Aino name, *Katamashatshi*).

Distrib. In Kamtschatka and the Aleutian Islands. As var. (?) *Grayanus*, Max., in

the island of Yezo. In Saghalin, a nearly related species, *Cnicus Weyrichii*, Max., is found. The Kurile plants have white flowers.

157. Picris japonica, Thunb. Fl. Jap. p. 299; Ledeb. Fl. Ross. II, p. 800; Max. Prim. Fl. Amur. p. 177; Fr. & Sav. Enum. I, p. 268. *P. kamtschatka*, Ledeb. in Mém. Acad. Petersb. V, p. 557. *P. dahurica*, DC. Prodr. VII, p. 129. *P. davurica*, Fisch. & Hornem. H. Hafn. Suppl., p. 155. *Picris hieracioides*, var. *japonica*, Regel, Pl. Radd. III, 4, p. 25.

Hab. Urup! (*ex* Max.). *Etorofu*, at Furubetsu.

Distrib. Japan, Saghalin, Manchuria, Siberia to the Altai districts, northern China, and Kamtschatka to Sitka in Alaska.

158. Taraxacum lyratum, DC. Prodr. VII, p. 148; Ledeb. Fl. Ross. II, p. 816; F. Schm. Fl. Sach. p. 154. *Taraxacum officinale*, Wigg., var. *alpinum*, Koch, lus., *lyratum*, Herd. Pl. Radd. III, 4, p. 43.

Hab. Kurile Islands (*ex* Turcz.)—"scapis glabris."

Distrib. Altai and Baikal districts of Siberia, Saghalin, Kamtschatka and the Aleutian Islands.

159. Lactuca Thunbergii, Benth.; Max. Mél. Biol. IX, p. 361. *Ixeris Thunbergii*, A. Gray, Bot. Jap. p. 397; Miq. Prol. p. 123. *Prenanthes dentata*, Thunb. Fl. Jap. p. 301.

Hab. Etorofu, at Furubetsu.

Distrib. Japan: from Kiusiu to northern Yezo.

160. Lactuca repens, Benth.; Max. Mél. Biol. IX, p. 364. *Ixeris repens*, A. Gray, Bot. Jap. p. 397; Benth. Fl. Hongk. p. 194; Fr. & Sav. Enum. I, p. 271. *Chorisis repens*, DC. Prod. VII, p. 178. *Nabalus repens*, Ledeb. Fl. Ross. II, p. 840.

Hab. Kurile Islands! (*ex* Max.). *Etorofu*, at Rausu.

Distrib. Kamtschatka, Saghalin, Japan, Manchuria, Corea, China.

161. Lactuca sibirica, Benth.; Max. Mél. Biol. IX, p. 357. *Mulgedium sibiricum*, Less. Syn. p. 142; Ledeb. Fl. Ross. II, p. 843; Herder, Pl. Radd. III, 4, p. 72.

Hab. Paramushir! at a lake (*ex* Max.). *Etorofu*, at Tsurubetsu.

Distrib. Northern and eastern Europe, Siberia, Manchuria, Saghalin, Yezo (middle and northern) and Kamtschatka.

162. Sonchus arvensis, L., var. **uliginosus**, Trautv. Pl. Schrenk. no. 715; Herder, Pl. Radd. III, 4, p. 46; Fr. & Sav. Enum. I, p. 275. *Sonchus uliginosus*, M. a. B.; Ledeb. Fl. Ross. II, p. 834. *S. maritimus*, L.; Ledeb. *l. c.* p. 835; F. Schm. Fl. Sach. p. 154. *S. brachyotus*, DC. Prodr. VII, p. 186; Max. Prim. Fl. Amur. p. 181.

Hab. Shikotan, on the beach at the foot of a rocky cliff.

Distrib. From middle and eastern Europe through the southern districts of Siberia and Dahuria to northern China and Manchuria, Saghalin and Japan.

CAMPANULACEÆ.

163. Campanula rotundifolia, L., var. **arctica** Lange, Fl. Dan. XVI, p. 8, t. 7211; A. Gray, Synop. Fl. II, Suppl. p. 395. *C. linifolia*, Lam.; Ledeb. Fl. Ross. II, p. 888. *C. Scheuchzeri*, A. Gray, Synop. Fl. II, p. 12. *C. linifolia*, var. *Langsdorffiana*, DC. Prodr. VII, 2, p. 471.

Hab. *Urup!* (Mertens).

Distrib. Arctic and alpine Europe; from the Altai region of Siberia to the Ochotsk district; Saghalin, Alaska, in the Rocky Mountains to Colorado, east to Newfoundland and Labrador; Greenland.

164. **Adenophora verticillata**, Fisch. in Mém. Soc. Nat. Mosc. VI, p. 167; Ledeb. Fl. Ross. II, p. 892; Fr. & Sav. Enum. I, p. 278, II, p. 422. *Campanula tetraphylla*, Thunb. Fl. Jap. p. 87.

Hab. *Etorofu*, at Tsurubetsu. My specimen is too young to determine the variety. It has four smooth obovate leaves in a whorl.

Distrib. Baikal-Siberia, Dahuria, Manchuria, Saghalin and Japan.

ERICACEÆ.

165. **Vaccinium Oxycoccus**, L. Sp. p. 351; A. Gray, Synop. Fl. II, p. 25; Max. Mél. Biol. VIII, p. 614; Pallas, Fl. Ross. I, 2, p. 47.

Hab. *Kurile Islands* (*ex* Pallas).

Dr. Gray, in the supplement to his Synoptical Flora (II, p. 396), refers the plants from Japan, Saghalin, northeastern Asia, and also from Washington Territory and northern Oregon, having larger and obtuse leaves, and flowers which are strictly umbellate from the scaly bud, to his new var. *intermedium*. Among the Hakodate specimens collected by J. Small there is one which has a leafy shoot starting from the flower-bearing bud, approaching *Vaccinium macrocarpon* in general appearance.

Distrib. In sphagnous swamps in the subarctic and alpine regions of Europe, northern Asia and North America.

166. **Vaccinium Vitis-Idaea**, L. Sp. p. 351; A. Gray, Bot. Jap. p. 397, Synop. Fl. II, p. 25; Max. Mél. Biol. VIII, p. 605; Pallas, Fl. Ross. I, 2, p. 46.

Hab. *Kurile Islands* (*ex* Pallas); *Shumshu* (J. Akakabe); *Shikotan; Etorofu*, at Furubetsu, Arimoi and Shibetoro.

Distrib. All around the arctic circle, descending southward in Europe to the alpine regions of the Mediterranean border, and to the Caucasus; and in Asia, to the Altai Mountains and Dahuria, and to the alpine region of Kiusiu in Japan; in North America, to British Columbia in the west, and to northern New England in the east.

167. **Vaccinium praestans**, Lamb. in Trans. Linn. Soc. X, p. 264, t. 9; Ledeb. Fl. Ross. II, p. 904; Max. Prim. Fl. Amur. p. 187, t. 8, f. 19–23, Mél. Biol. XII, p. 489; F. Schm. Fl. Sach. p. 156.

Hab. *Shikotan*, in exposed grassy places on top of cliffs. *Etorofu*, at Furubetsu.

Distrib. Kamtschatka (western coast, J. Small); northeastern Manchuria; Saghalin, Yezo (Otsnishi, Prov. Nemuro!); and in the alpine regions of middle Japan.

168. **Vaccinium uliginosum**, L. Sp. p. 350; Ledeb. Fl. Ross. II, p. 904; Pallas, Fl. Ross. I, 2, p. 45; Max. Mél. Biol. VIII, p. 605; A. Gray, Synop. Fl. II, p. 22.

Hab. *Kurile Islands* (*ex* Pallas).

Distrib. In the arctic, alpine and subalpine regions of Europe; northern Asia, extending to middle Japan in the east; and in North America throughout arctic and British America coming down to Oregon in the west, and to New England and New York in the east.

169. Vaccinium hirtum, Thunb. Fl. Jap. p. 155; Max. Mél. Biol. VIII, p. 605; Fr. & Sav. Enum. I, p. 605.—Var. **Smallii**, Max. *l. c.* *Vaccinium Smallii*, A. Gray, Bot. Jap. p. 398; F. Schm. Fl. Sach. p. 156.

Hab. *Etorofu*, at Furubetsu and Arimoi.

Distrib. Southern Saghalin to Kiusiu in Japan.

170. Arctostaphylos Uva-ursi, Spreng. Syst. Veg. II, p. 287; Ledeb. Fl. Ross. II, p. 909; F. Schm. Fl. Sach. p. 157; A. Gray, Synop. Fl. II, p. 27. *Arbutus Uva-ursi*, L. Sp. p. 395; Pallas, Fl. Ross. I, 2, p. 48.

Hab. *Kurile Islands* (*ex* Pallas).

Distrib. Arctic and alpine Europe; northern Asia, especially in the mountain districts of southern Siberia, northern Saghalin, eastern Siberia and Kamtschatka; Alaska in North America, where it spreads over the arctic and northern regions descending along the higher mountains to New Mexico and northern California in the west, and to Pennsylvania in the east.

171. Cassiope lycopodioides, Don, in Edinb. N. Phil. Journ. XVII, p. 157; Ledeb. Fl. Ross. II, p. 912; Max. Mél. Biol. VIII, p. 614; Fr. & Sav. Enum. I, p. 285; A. Gray, Synop. Fl. II, p. 36. *Andromeda lycopodioides*, Pallas, Fl. Ross. I, 2, p. 55, t. 73, f. 1.

Hab. *Shumshu* (Hakodate Museum).

Distrib. Eastern Siberia in the Ochotsk district; Kamtschatka; Yezo (Volc. Talmai, Prov. Iburi) to middle Japan; Aleutian Islands to Oregon in North America.

172. Leucothoe Grayana, Max.! Mél. Biol. VIII, p. 613; Fr. & Sav. Enum. I, p. 284. *L. chlorantha*, A. Gray, Bot. Jap. p. 399 (not DC.).

Hab. *Shikotan*, on hillsides.

The plant is common in the mountain woods of Yezo on both the eastern and western coasts. It comes down as far south as middle Japan, where it is found only in the alpine woods.

173. Bryanthus taxifolius, A. Gray, Proc. Am. Acad. VII, p. 368, Synop. Fl. II, p. 37. *Phyllodoce taxifolia*, Salisb. Parad. Lond. t. 56; Ledeb. Fl. Ross. II, p. 916; Max. Rhod. As. Or. p. 6.

Hab. *Paramushir!* (*ex* Max.).

Distrib. Northern Europe and the central Pyrenees; Altai and Baikal districts of Siberia, Dahuria, northern Manchuria, eastern Siberia, Kamtschatka, northern and middle Japan; Aleutian Islands, Copper Island; and also on the alpine mountain summits of northern New England and Canada, Labrador, Greenland.

174. Rhododendron chrysanthum, Pall. It. III, p. 729, t. IV, f. 1–2; Ledeb. Fl. Ross. II, p. 920; Max. Prim. Fl. Amur. p. 189, Rhod. As. Or. p. 20.

Hab. *Shumshu!* (*ex* Max.).

Distrib. Altai and Baikal districts of Siberia, Dahuria, northeastern Manchuria, eastern Siberia, Kamtschatka, and adjacent islands to Sitka; Saghalin, northern and middle Japan, Yezo (L. Böhmer), Tateyama, Prov. Etchu (Yatabe).

175. Rhododendron kamtschaticum, Pall. Fl. Ross. I, p. 48, t. 33; Ledeb. Fl. Ross. II, p. 922; Max. Rhod. As. Or. p. 41; A. Gray, Synop. Fl., II, p. 40.

Hab. *Urup!* (*ex* Max.). *Shikotan*, on rocky cliffs along the harbor.

Distrib. Eastern Siberia, in the Ochotsk district and Tschuktches-land, Kamtschatka, Saghalin and northern Japan, the Aleutian Islands and Alaska.

176. Ledum palustre, L. Sp. p. 591; Ledeb. Fl. Ross. II, p. 923; Max. Rhod. As. Or. p. 49; A. Gray, Synop. Fl. II, p. 43.—Var. **dilatatum**, Wahlbg. Fl. Lapp. p. 103.

Hab. *Shikotan*, on hillsides.

Distrib. Eastern Siberia, northeastern Manchuria, Saghalin, Yezo to the alpine region of southern Japan, Kamtschatka to Sitka in Alaska, and also in the Altai mountains and northern Europe. The species is widely distributed throughout the arctic and cool temperate regions of the northern hemisphere.

177. Pyrola renifolia, Max. Prim. Fl. Amur. p. 190, Mél. Biol. VIII, p. 634; F. Schm. Fl. Sach. p. 158; Fr. & Sav. Enum. I, p. 295.

Hab. *Etorofu*, on the Arimoi side of Nobori.

The plant is commonly found in the mountain woods of Yezo, Saghalin and eastern Manchuria. It occurs also in the higher mountains of middle Japan.

178. Pyrola media, Swartz in Act. Holm. 1804, p. 257, f. 7; Ledeb. Fl. Ross. II, p. 929; Hook. f. Stud. Flora, 3rd ed. p. 255; A. Gray, Bot. Jap. p. 400; Max. Mél. Biol. Biol. p. 625.

Hab. *Etorofu*, at Shibetoro.

The plant approaches nearer in all its characters to the European *P. media* than to our *P. minor* or *rotundifolia*. The stamens are erect, and shorter than the nearly straight stout style; the stigmatic lobes are minute and erect, and are provided with a distinct ring around their base; and the anthers are not narrowed below the pores. The bracts are larger than in *P. minor*, and are longer than the pedicels. A specimen collected by C. Wright at Simoda is in bud. Compared with my plant the style is longer and deflexed, and the anthers are larger, even in the bud, and somewhat narrowed beneath the openings.

179. Pyrola minor, L. Sp. p. 396; Ledeb. Fl. Ross. II, p. 930; A. Gray, Bot. Jap. p. 400, Synop. Fl. II, p. 46; Herder, Pl. Radd. IV, p. 80; Max. Mél. Biol. VIII, p. 652.

Hab. *Kurile Islands!* (herb. Pallas). *Etorofu*, at Furubetsu.

Distrib. Europe, northern Asia, and northern North America. In eastern Asia it comes down through Saghalin and Yezo to the alpine woods of middle Japan. In North America it extends to Oregon and New Mexico, and to the White Mountains.

180. Pyrola secunda, L. Sp. p. 396; Ledeb. Fl. Ross. II, p. 930; Max. Mél. Biol. VIII, p. 625; A. Gray, Synop. Fl. II, p. 46; F. Schm. Fl. Sach. p. 158.

Hab. *Etorofu*, at Furubetsu.

Distrib. Europe, northern Asia, Manchuria to the border of Corea, Saghalin, and northern and middle Japan; British America to Colorado and California, and to New England and New York, and also in Mexico.

DIAPENSIACEÆ.

181. Diapensia lapponica, L. Sp. p. 141; Ledeb. Fl. Ross. III, p. 85; Trautv. & Mey. Fl. Ochot. p. 69; F. Schm. Fl. Sach. p. 161; A. Gray, Bot. Jap. p. 400; Herder, Pl. Radd. IV, 1, p. 205.

Hab. *Shumshu* (Hakodate Museum).

Herder remarks that the plants found in northeastern Asia (Saghalin, Ochotsk district, Tschuktches-land, Kamtschatka and the adjacent islands) have characters in common with Schmidt's var. *obovata*. As I have not at this moment the Shumshu specimen at hand, I cannot say anything definite about its relation to the Saghalin plant. Wright's specimen from Hakodate and Tschonoski's (*D. lapponica*, var. *asiatica*, Max.) from Nambu in northern Japan have their leaves distinctly marked with reticulated veins on their upper surface and broadly spatulate in shape. In one of the Hakodate specimens there is a sterile branch which has leaves all tapering into slender stalks and obovate-cuneate in form. The Saghalin and Japanese specimens seem to me alike, and should be put under the same variety of *D. lapponica*. The typical form of this species is found in the arctic and subarctic regions of Europe, Greenland, and eastern North America, descending to the alpine districts of northern New England.

PLUMBAGINACEÆ.

182. Armeria vulgaris, Willd. Enum. I, p. 333; Herder, Pl. Radd. in Act. Hort. Petrop. x, 1, p. 53; A. Gray, Synop. Fl. II, p. 55. *Statice Armeria*, L.; Ledeb. Fl. Ross. III, p. 456.—Forma **arctica**, Herd. l. c.

Hab. *Kurile Islands* (Pallas, *ex* Herder).

This polymorphous species is widely distributed in Europe and northern Asia, especially in the northeastern portion; and in North America from Labrador across the arctic region to Alaska, descending along the Pacific coast to California, and occurring again in Chili and Patagonia.

PRIMULACEÆ.

183. Dodecatheon Meadia, L., var. **brevifolium**, A. Gray, Bot. Calif. I, p. 467, Synop. Fl. II, p. 57. *D. ellipticum*, Nutt. *ex* Durand, Pl. Pratt. in Journ. Acad. Phil. n. ser. II, p. 95; A. Gray, Bot. Gaz. XI, p. 232.

Hab. *Urup!* (*ex* Max.).

Distrib. Most common in western California, spreading to Utah, and also to British Columbia and farther up to Bering Strait and the Kurile Islands.

184. Primula cuneifolia, Ledeb. in Mém. Acad. Petersb. v, p. 522, Fl. Ross. III, p. 15; Regel & Til. Fl. Ajan. p. 111; A. Gray, Synop. Fl. II, p. 59; Franchet in Bull. Soc. Philomath. Paris, May, 1886, and April, 1888.

Hab. *Shumshu! Paramushir!* and *Urup!* (*ex* Max.).

Distrib. Eastern Siberia along the Ochotsk Sea, Kamtschatka and northern Japan; the Aleutian Islands and Alaska.

185. Primula farinosa, L., Ledeb. Fl. Ross. III, p. 13; Regel, Pl. Nov. Turk. fasc. II, p. 44; A. Gray, Synop. Fl. II, p. 58.—Var. **Fauriae**. *P. Fauriæ*, Franch. l. c.; Pax in Engler Bot. Jahrb. 1888, p. 211. *P. farinosa*, var. *armena*, Pax, l. c., p. 199 (in part). *P. farinosa*, var. *luteo-farinosa*, Fr. & Sav. Enum. II, p. 429.

Hab. *Shikotan*, on rocky cliffs along the harbor. *Etorofu*, at Tsurubetsu.

The leaves are ovate to rhombic-orbicular, more or less abruptly cuneate, tapering into an elongated margined petiole, toothed, crenate, or nearly entire; scape two or three times the length of the leaf; bracts lanceolate-subulate, somewhat gibbose at base, and three to six times shorter than the glabrous pedicels; umbel few- to several-flowered, generally 6–7-flowered; calyx campanulate and parted to the middle; teeth obtuse or subacute; and the tube of the corolla about one and one-half times the length of the calyx. According to Franchet the capsule is twice the length of the calyx.

Our plants coincide exactly with the descriptions of *P. Fauriæ*, Franch., and I have no doubt of their being identical, though my specimens have no fully ripened capsules for comparison. From the continental var. *armena*, our plant differs in the rounded blades of the leaves and longer pedicels. Whether the capsule of the former is also as long as ours or not I have no means of determining at present either from the specimens or from the descriptions. The size of the capsule in *P. farinosa* seems to be quite variable. In some of the European, and especially in the American plants, the capsule often attains the size of about twice the length of the calyx. Pax wrongly included *P. Fauriæ* and also *P. macrocarpa*, Max., under his new sect. *Macrocarpæ*. These plants properly belong to his sect. *Farinosæ*. Their flowers are not so large as those of *P. cuneifolia*, and their bracts are somewhat gibbose. The younger leaves in the specimens of *P. macrocarpa* in the Gray Herbarium show distinctly the yellow powder on their under surface, though the older leaves and calyx are completely naked. The plant is hardly distinguishable from the American *P. mistassinica*, Michx. (*P. farinosa*, var. *mistassinica*, Pax), either the shape and size of the flowers and capsules, or by the character of the leaves and their teeth.

The species is very variable and widely distributed in the arctic and cool temperate regions of Europe, northern Asia and North America, and also in antarctic America.

186. Androsace villosa, L. Sp. p. 142; Ledeb. Fl. Ross. III, p. 17; Max. Mél. Biol. XII, p. 753.—Var. **latifolia**, Ledeb. Fl. Alt. I, p. 218; Herder, Pl. Radd. IV, 1, p. 118; Max. l. c. *A. Chamæjasmeæ*, Koch, Syn. p. 584; Ledeb. Fl. Ross. III, p. 18; Reg. & Til. Fl. Ajan., p. 111; A. Gray, Synop. Fl. II, p. 60.

Hab. *Kurile Islands* (*ex* Chamisso).

Distrib. Arctic and alpine regions of Europe and North America (from Colorado northward), the Aleutian Islands, Kamtschatka, extreme eastern Siberia to the Trans-Baikal district, northwestern China, northern Thibet, the Altai mountains and northern Ural.

187. Trientalis europaea, L. Sp. p. 344; Ledeb. Fl. Ross. III, p. 24; Fr. & Sav. Enum. II, p. 430; Herd. Pl. Radd. IV, 1, p. 131; A. Gray, Synop. Fl. II, p. 61.

Hab. *Paramushir*, *Urup*, etc.! (*ex* Max.). *Etorofu*, at Rubetsu.—Var. *arctica*, Ledeb. l. c., in the *Kurile Islands* (herb. Fisch., *ex* Herder).

Distrib. Widely spread in Europe from the arctic region to the northern Alps; in northern Asia to the Bering Sea and Manchuria, descending in Japan to the alpine district of the main island; and in North America, from Alaska southward to the mountains of Oregon and California.

GENTIANACEÆ.

188. Crawfurdia japonica, Sieb. & Zucc. Fl. Jap. Fam. Nat. II, p. 36, n. 516; Miq. Prol. Fl. Jap. p. 288; Fr. & Sav. Enum. I, p. 324; C. B. Clarke in Hook. f. Fl. Brit. Ind. IV, p. 107. *Golowninia japonica*, Max. Mél. Biol. IV, p. 41, t. 4.

Hab. *Etorofu*, at Furubetsu.

Distrib. Japan, China, Formosa, Sikkim, Himalaya.

189. Gentiana auriculata, Pall. Fl. Ross. II, p. 102, t. 92, f. 1; Ledeb. Fl. Ross. III, p. 55; Herder, Pl. Radd. IV, 1, p. 149; A. Gray, Synop. Fl. II, p. 118; F. Schm. Fl. Sach. p. 160.

Hab. *Kurile Islands* (Herder, *ex* Georgi). *Urup !* and elsewhere (*ex* Max.).

Distrib. Saghalin, northeastern Manchuria, Ochotsk district, Kamtschatka and adjacent islands, to Alaska?

190. Gentiana glauca, Pall. Fl. Ross. II, p. 104, t. 93, f. 2; Griseb. in DC. Prodr. IX, p. 111; Ledeb. Fl. Ross. III, p. 66; A. Gray, Synop. Fl. II, p. 120; Herder, Pl. Radd. IV, 1, p. 172.—Var. **major**, Ledeb., l. c.

Hab. *Urup !* (*ex* Max.).

Distrib. Eastern Siberia from the northern Jabbonoi-Chrebet through the Ochotsk region to Tcshuktches-land and Kamtschatka. In North America, from arctic Alaska along the higher and northern Rocky Mountains to Oregon.

191. Swertia perennis, L. Sp. p. 226; A. Gray, Synop. Fl. II, p. 124. *S. obtusa*, Ledeb. in Mém. Acad. Petersb. V, p. 526, and Fl. Ross. III, p. 75; F. Schm. Fl. Amg. Bur. p. 56.—Var. **obtusa**, Griseb. in DC. Prodr., IX, p. 132; Trautv. & Mey., Fl. Och., p. 68; Herder, Pl. Radd., IV, 1, p. 188.

Hab. *Kurile Islands* (herb. Fisch., *ex* Herder).

Distrib. This species is widely distributed throughout a greater part of the temperate regions of Europe and in northern and central Asia and also in northwestern and western North America. Our present variety is chiefly northern Asiatic and western North American in its range of distribution; and as var. *cuspidata*, Max. (Mél. Biol., IX, p. 398), in the alpine region of middle Japan.

192. Swertia tetrapetala, Pall. Fl. Ross. II, p. 99, t. 90, f. 2. *Stellera cyanea*, Turcz. in Bull. Mosc. 1840, p. 167; Ledeb. Fl. Ross. III, p. 72. *Rellesta cyanea*, Turcz. Fl. Baic.-Dah. II, 2, p. 270; Max. Prim. Fl. Amur. p. 198. *Ophelia papillosa*, Fr. & Sav. Enum. II, p. 450.

Hab. *Kurile Islands* (Steller, *ex* Turcz., etc.). *Urup !* and elsewhere (*ex* Max.). *Shikotan*, grassy places on top of cliffs along the harbor. *Etorofu*, at Furubetsu and Shibetoro.

Distrib. Eastern Siberia around the Ochotsk Sea; northeastern Manchuria; Kamtschatka, and through the Kurile Islands to the eastern coast of Yezo; Samani Sands, Province Hidaka (K. M., Aug. 19, 1884, fl.); Yubutsu, Prov. Iburi (K. M., Aug. 23, 1884, fl.).

193. Menyanthes trifoliata, L. Sp. p. 145; Ledeb. Fl. Ross. III, p. 76; Fr. & Sav. Enum. p. 325; A. Gray, Synop. Fl. II, p. 128.

Hab. *Paramushir!* (*ex* Max.).

Distrib. Widely distributed in the arctic and cool temperate regions of Europe, Asia and North America.

BORRAGINACEÆ.

194. Cynoglossum furcatum, Wall. in Roxb. Fl. Ind. II, p. 6; Max. Mél. Biol. VIII, p. 554; C. B. Clarke in Hook. f. Fl. Brit. Ind. IV, p. 155; Fr. & Sav. Enum. I, p. 336.

Hab. *Etorofu*, at Furubetsu.

Distrib. Throughout Japan, from northern Yezo to Kiusiu, and in the mountains of India, Ceylon and northern Afghanistan.

195. Mertensia maritima, G. Don, Syst. IV, p. 320; Ledeb. Fl. Ross. III, p. 132; Max. Mél. Biol. VIII, p. 532; A. Gray, Bot. Jap. p. 403, and Synop. Fl. II, p. 200; Herd. Pl. Radd. IV, 1, p. 226.

Hab. *Kurile Islands!* (herb. Fisch.).

Distrib. Arctic and northern Europe, Asia and North America, descending in eastern Asia to the northern provinces of the main island of Japan, and in North America to Washington Territory on the west coast, and to Cape Cod on the east.

196. Mertensia stylosa, DC. Prod. X, p. 91; Ledeb. Fl. Ross. III, p. 135; Herd. Pl. Radd. IV, 1, p. 231.

Hab. "*Kurile Islands?* (Steller, *ex* Pallas in Willd. herb.)."

Distrib. Subalpine region of Baikal-Siberia, Dahuria and eastern Siberia (on the mountains of Ishiga).

197. Mertensia paniculata, Don, Syst. IV, p. 318; A. Gray, Synop. Fl. II, p. 201; Herder, Pl. Radd. IV, 1, p. 229. *Mertensia pilosa*, DC. Prodr. X, p. 90; Ledeb. Fl. Ross. III, p. 134. *Steenhammera pilosa*, Turcz. in Bull. Mosc. 1840, p. 249. *M. pubescens*, DC. Prodr. X, p. 90.

Hab. *Kurile Islands* (Steller, *ex* Pallas in Willd. herb., and herb. Pallas, *ex* Herder). *Shumshu!* etc. (*ex* Max.).

Distrib. "Hudson's Bay and Lake Superior, thence to the Rocky Mountains (south to Utah and Nevada), Alaska, Behring Straits;" Kamtschatka and the Kuriles.

198. Mertensia rivularis, DC. Prodr. X, p. 90; Ledeb. Fl. Ross. III, p. 135; Herder, Pl.; Radd. IV, 1, p. 232; Max. Mél. Biol. VIII, p. 543. *Lithospermum rivulare*, Turcz. in Bull. Mosc. 1840, p. 74. *Steenhammera rivularis*, Turcz., *l. c.* p. 248.

Hab. *Kurile Islands* (Orloff, *ex* Herder).

Distrib. Northern Manchuria, eastern Siberia in the Ochotsk district; and Kamtschatka and adjacent islands.

199. Mertensia sibirica, G. Don, Gen. Syst. IV, p. 319; A. Gray, Synop. Fl. II, p. 200. *M. denticulata*, G. Don, l. c.; DC. Prodr. X, p. 90; Ledeb. Fl. Ross. III, p. 133. *Pulmonaria denticulata*, Chamisso in Linnæa, VI, p. 448. *Steenhammera pterocarpa*, Turcz. in Bull. Mosc. 1840, p. 245?

Hab. *Kurile Islands?* (*ex* Turcz.).

Distrib. Northern and eastern Siberia, Kamtschatka, arctic Alaska, and along the higher mountains southward to Colorado and California.

200. Myosotis intermedia, Link, Enum. Hort. Berol. I, p. 164; DC. Prodr. x, p. 108; Ledeb. Fl. Ross. III, p. 146; Max. Mél. Biol. VIII, p. 545. *M. arvensis*, L.; A. Gray, Pl. Jap. p. 316.

Hab. *Shikotan*, on hillsides.

Distrib. Europe, northern Africa, Siberia (excl. eastern Siberia), to northern Afghanistan and subalpine Kashmir; northern Japan.

SCROPHULARIACEÆ.

201. Linaria japonica, Miq. Prol. Fl. Jap. p. 47; Fr. & Sav. Enum. I, p. 342. *L. geminiflora*, F. Schm.! Fl. Sach. p. 161; Herder, Pl. Radd. IV, 1, p. 293.

Hab. *Shikotan*, on sandy beach.

Distrib. Along the coast-regions of Japan, especially common northward. Saghalin, Manchuria.

202. Scrophularia alata, A. Gray, Bot. Jap. p. 101; Miq. Prol. Fl. Jap. p. 47; F. Schm. Fl. Sach. p. 162; Herder, Pl. Radd., IV, 1, p. 294; Fr. & Sav. Enum. I, p. 342.

Hab. *Shikotan*, moist places at the foot of cliffs along the harbor. *Etorofu*, at Tsurubetsu.

Distrib. Along the coast region of northern and middle Japan, Saghalin and Manchuria (*ex* Herder).

203. Mimulus ringens, L. Sp. p. 634; Ledeb. Fl. Ross. II, p. 223; Georgi, Beschr. Russ. Reich. III, p. 1113; A. Gray, Synop. Fl. II, p. 276, Suppl. p. 446.

Hab. *Kurile Islands?* (Merk., *ex* Georgi).

Distrib. Canada and eastern United States to Iowa, south to Texas, and north to the Hudson's Bay district.

204. Veronica longifolia, L. Sp. p. 10; Ledeb. Fl. Ross. III, p. 232; Max. Prim. Fl. Amur. p. 207; Fr. & Sav. Enum., I, p. 348.

Hab. *Kurile Islands!* (*ex* Max.)

Distrib. Japan, Saghalin, Manchuria and eastern Siberia, westward through northern Asia to the Atlantic coasts in Europe.

205. Veronica Beccabunga, L., var. **americana**, Glehn, *ex* Max. Mél. Biol. XI, p. 278. *V. americana*, Schwein.; Benth. in DC. Prodr. x, p. 468; A. Gray, Synop. Fl. II, p. 287; Herd. Pl. Radd, IV, 2, p. 20. *V. Beccabunga*, F. Schm. Fl. Sach. p. 163.

Hab. *Kurile Islands!* (*ex* Max.). *Etorofu*, at Tsurubetsu.

Distrib. Throughout Yezo, Saghalin, Kamtschatka, the Aleutian Islands, Alaska to California and New Mexico, Canada and the northern Atlantic States.

206. Veronica aphylla, L., var. **grandiflora**, Benth. in DC. Prodr. x, p. 476; Ledeb. Fl. Ross. III, p. 245; Herd. Pl. Radd. IV, 2, p. 32. *V. grandiflora*, J. Gärtn. in Comment. Ac. Petrop. XIV, p. 531, t. 18, f. 1. *V. kamtschatica*, L. f. Suppl. p. 83; A. Gray, Synop. Fl. II, p. 287.

Hab. *Kurile Islands* (*ex* Chamisso).

Distrib. Kamtschatka and adjacent islands to the Aleutian Islands (Kiska).

The typical form of this species is found in the alpine districts of Europe.

207. Veronica Stelleri, Pall.; Rœm. & Sch. Syst. Mant. I, p. 102; Benth. in DC. Prodr. X, p. 481; Ledeb. Fl. Ross. III, p. 247; A. Gray, Synop. Fl. II, p. 288; Max. Mél. Biol. XII, p. 501.

Hab. *Kurile Islands* (Pall.). *Shumshu!* etc. (*ex* Max.).

Distrib. Aleutian Islands; Kamtschatka; Saghalin; Yezo; Shikaribetsu in Tokachi (S. Tanouchi), and in the alpine region of middle Japan.

208. Veronica serpyllifolia, L. Sp. p. 12; Benth. in DC. Prodr. X, p. 482; Ledeb. Fl. Ross. III, p. 248; Turcz. Fl. Baic.-Dah., II, 2, p. 346; A. Gray, Synop. Fl., II, p. 288.

Hab. *Kurile Islands* (*ex* Turcz.). *Urup!* (*ex* Max.).

Distrib. Widely distributed in Europe, northern and southern Africa, northern and middle Asia, a greater part of temperate North America, and in the higher mountains of western South America; Falkland Islands. In Japan it has so far been found only in the island of Yezo.

209. Euphrasia officinalis, L. Sp. p. 604; Ledeb. Fl. Ross. III, p. 262; A. Gray, Synop. Fl. II, p. 305; Fr. &. Sav. Enum. I, p. 351.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Japan, Saghalin, Kamtschatka, eastern Siberia, Manchuria, westward through northern and central Asia to Europe; Greenland, Labrador to the alpine regions of New England and westward to the northern Rocky mountains and Alaska.

210. Pedicularis Chamissonis, Stev. Monograph. p. 20, t. 4, f. 1; Bunge in Ledeb. Fl. Ross. III, p. 274; Max. Mél. Biol. X, p. 90, XI, p. 284, and XII, p. 858, t. 5, f. 90; A. Gray, Synop. Fl. II, p. 306.

Hab. *Shumshu!*, *Paramushir!*, etc. (*ex* Max.). *Etorofu*, at Rubetsu.

Distrib. Kamtschatka, the Aleutian Islands, Sitka, and the Kuriles. As var. *japonica*, Max., in the higher mountains of Japan.

211. Pedicularis verticillata, L. Sp. p. 608; Bunge in Ledeb. Fl. Ross. III, p. 270; Max. Mél. Biol. X, p. 95, XI, p. 286, and XII, p. 891, t. 6, f. 123; A. Gray, Synop. Fl. II, p. 305.

Hab. *Urup!* (*ex* Max.).

Distrib. Arctic and alpine regions of Europe, Siberia, northern Tibet, Mongolia, northern China, northern Manchuria, Kamtschatka and its adjacent islands, the Aleutian Islands, and Alaska to the arctic regions.

212. Pedicularis amoena, Adams in Stev. Monog. p. 25, t. 7; Bunge in Ledeb. Fl. Ross. III, p. 271; Max. Mél. Biol. X, p. 97, XI, p. 286, and XII, p. 886, t. 5, f. 115.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Kamtschatka, eastern and northern Siberia to arctic Russia, and alpine regions of Dahuria, northern Mongolia, and of the Altai, Alatau and Baikal.

213. Pedicularis resupinata, L. Sp. p. 608; Bunge in Ledeb. Fl. Ross. III, p. 281; F. Schm. Fl. Sach. p. 163; A. Gray, Bot. Jap. p. 402; Max. Mél. Biol. X, p. 106, and XI, p. 831, t. 3, f. 51; Fr. & Sav. Enum. I, p. 351.

Hab. *Urup!* (*ex* Max.). *Etorofu*, at Shibetoro.

Distrib. Japan, Saghalin, Kamtschatka, throughout Siberia, Manchuria, northern China, Mongolia, and also in eastern Russia.

Var. **teucriifolia**, Max. Mél. Biol. x, p. 107; Herder, Pl. Radd. iv, 2, p. 91. *P. teucriifolia* M. a Bieb. in Stev. Monog. p. 31, t. 10, f. 1; Bunge, in Ledeb. Fl. Ross. iii, p. 282.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Kamtschatka and adjacent islands.

214. Pedicularis euphrasioides, Steph. in Willd. Sp. iii, p. 204; Bunge, in Ledeb. Fl. Ross. iii, p. 284; F. Schm. Fl. Sach. p. 163; A. Gray, Synop. Fl. ii, p. 307; Max. Mél. Biol. x, p. 112, and xii, p. 901.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Throughout northern and eastern Siberia, Dahuria, northern Manchuria, northern Saghalin, Kamtschatka and adjacent islands, Alaska and through arctic North America to Labrador and Greenland.

OROBANCHACEÆ.

215. Boschniakia glabra, C. A. Mey. *ex* Bong. Veg. Sitcha, p. 159; Ledeb. Fl. Ross. iii, p. 323; F. Schm. Fl. Sach. p. 164; A. Gray, Synop. Fl. ii, p. 313; Fr. & Sav. Enum. i, p. 354; Herder, Pl. Radd. vii, p. 7.

Hab. *Kurile Islands* (*ex* Pallas).

Distrib. Parasitic on the roots of *Alnus viridis* in eastern Siberia, in the Altai and Baikal; Dahuria, northern Manchuria, Saghalin, northern and middle Japan, Kamtschatka, the Aleutian Islands, Alaska, and to the Slave Lake district.

LABIATÆ.

216. Scutellaria galericulata, L. Sp. p. 599; A. Gray, Synop. Fl. ii, p. 381.— Var. **scordifolia**, Regel, Tent. Fl. Uss. p. 118; Herder, Pl. Radd. in Act. H. Petrop. x, 1, p. 28. *S. scordifolia*, Fisch.; Benth. in DC. Prodr. xii, p. 425; Ledeb. Fl. Ross. iii, p. 398; Fr. & Sav. Enum. i, p. 377.

Hab. *Shikotan*, in grassy places along the beach.

Distrib. Japan, Saghalin, Kamtschatka, eastern Siberia to the Altai district of Siberia, Manchuria, Corea, Mongolia and northern China.

The species is widely distributed in Europe, northern Asia and North America.

217. Brunella vulgaris, L. Sp. p. 600; Benth. in DC. Prodr. xii, p. 409; Ledeb. Fl. Ross. iii, p. 392; A. Gray, Synop. Fl. ii, p. 382; Fr. & Sav. Enum. i, p. 376.

Hab. *Etorofu*, at Furubetsu and Arimoi.

Distrib. Throughout the north temperate zone, mountains of Mexico, Australia and Tasmania.

218. Galeopsis Tetrahit, L. Sp. p. 579; Benth. in DC. Prodr. xii, p. 498; Ledeb. Fl. Ross. iii, p. 421; F. Schm. Fl. Sach. p. 165; A. Gray, Synop. Fl. ii, p. 385.

Hab. *Shikotan*, along small streams in the harbor, common. *Etorofu*, at Shana.

Distrib. Yezo, in Nemuro; Saghalin, Kamtschatka, Kodiak, Sitka, eastern Siberia, Manchuria, and to the Atlantic coasts of Europe. Naturalized in eastern North America from Europe.

219. **Stachys aspera**, Michx. Fl. Bor.-Am. II, p. 5; A. Gray, Synop. Fl. II, p. 387.—Var. **baicalensis**, Max. Fl. Asiæ Or. Frag. p. 44; Herd. Pl. Radd. in Act. H. Petrop. x, 1, p. 32. *S. Riederi*, Cham. in Linnæa VI, p. 570. *S. baikalensis*, Fisch. in Benth. Lab. p. 543; Fr. & Sav. Enum. I, p. 378 (in part). *S. palustris*, var. *hispida*, Ledeb. Fl. Ross. III, p. 414. *S. palustris*, var. *aspera*, f. *angustifolia!* A. Gray, Bot. Jap. 403.

Hab. *Shikotan*, in wet places.

Distrib. Yezo: Hakodate (J. Small), Sapporo, and common elsewhere; Saghalin, Kamtschatka, eastern Siberia along the Ochotsk coast to the Baikal district, and Manchuria. The species is widely distributed in the temperate regions of North America (west to New Mexico and Oregon), and in northeastern and eastern Asia under various forms.

I can hardly agree with Professor Maximowicz in considering some of the American forms of this species as identical with our present variety. Among the large number of specimens in the Gray Herbarium from different parts of the United States, I have failed to find any that agree even tolerably well with our Asiatic plant. Dr. Gray's var. *glabra* seems to approach nearest to var. *japonica*, Max., all characters considered.

PLANTAGINACEÆ.

220. **Plantago kamtschatica**, Link, Enum. H. Berol. I, p. 120; Ledeb. Fl. Ross. III, p. 478; F. Schm. Fl. Sach. p. 165; Herd. Pl. Radd. in Act. Hort. Petrop. x, 1, p. 62. *P. media*, A. Gray, Pl. Jap. p. 316.

Hab. *Etorofu*, common at Furubetsu, Shana and Shibetoro.

Distrib. Kamtschatka, Saghalin and Yezo.

P. asiatica, var. *vulgaris*, Turcz. Fl. Baic.-Dahur. II, fasc. 1, p. 11, is very closely related to our plant, and may be identical with it. Maack's Amur specimen, for instance, can scarcely be distinguished from *P. kamtschatica*, except by its leaves being occasionally 7-nerved and its spikes more elongated.

221. **Plantago major**, L. Sp. p. 112; Ledeb. Fl. Ross. III, p. 477; A. Gray, Synop. Fl. II, p. 389.—Var. **asiatica**, Decsne. in DC. Prodr. XIII, 1, p. 695. *P. asiatica*, L. Sp. 113; Ledeb. Fl. Ross. III, p. 479; Fr. & Sav. Enum. I, p. 384, II, p. 469.

Hab. *Etorofu*, at Furubetsu and Shana.

Widely distributed in several forms throughout the continent of Asia, southern Europe and western North America. *P. major*, L., var. *Asiatica*, A. Gray, l. c., appears to be identical with *P. major*, var. (*P. japonica*, Fr. & Sav. Enum. I, p. 384, II, p. 469), the capsule in both cases being subglobose or broadly ovoid, and 10–12-seeded.

My Kurile plants, as well as those which are found commonly throughout Japan from Yezo to the Loochoo Islands, and which are generally recognized as *P. major*, L., var. *asiatica*, have only four or five seeds in each capsule. The seeds are greatly larger than in the typical *P. major*, and the capsules are more elongated and have a tendency to taper at the tip. Franchet suggests that our plant may be *P. Cornuti*, Gouan. (*P. paludosa*, Turcz.). *P. Cornuti*, however, has conspicuously winged seeds and blunt

ovoid capsules. Its leaves are elliptical, tapering gradually at both ends, and are generally shorter than the petioles.

Our plant may be a good geographical form of the widely spread *P. major*, L.

MONOCHLAMYDEÆ.

CHENOPODIACEÆ.

222. Chenopodium album, L.; Moquin in DC. Prodr. XIII, 2, p. 70; Fenzl in Ledeb. Fl. Ross. III, p. 697; Benth. Fl. Austr. V, p. 159; Fr. & Sav. Enum. I, p. 386.

Hab. *Shikotan.* *Etorofu*, at Tsurubetsu.

Very common in Asia and Europe, spreading over the other parts of the world.

223. Salsola Soda, L. Sp. p. 323; Moq. in DC. Prodr. XIII, 2, p. 189; Fenzl in Ledeb. Fl. Ross. III, p. 803; F. Schm. Fl. Sach. p. 167; Fr. & Sav. Enum. I, p. 388.

Hab. *Shikotan.* *Etorofu*, at Tsurubetsu.

Distrib. Southern Europe, northern Africa, desert regions of western and middle Asia, Saghalin, Japan and southwestern Manchuria.

POLYGONACEÆ.

224. Polygonum aviculare, L.; Meisn. in DC. Prodr. XIV, p. 97; Ledeb. Fl. Ross. III, p. 531; A. Gray, Pl. Jap. p. 317; Fr. & Sav. Enum. I, p. 394.

Hab. *Etorofu*, at Furubetsu and Shana.

Distrib. Native of Europe and temperate Asia, now naturalized in most parts of the world, especially in the temperate zones.

225. Polygonum viviparum, L. Sp. p. 516; Meisner in DC. Prodr. XIV, p. 124; Ledeb. Fl. Ross. III, p. 519; Cham. & Schlecht, in Linnæa, III, p. 38; Trautv. & Mey. Fl. Och. p. 75; Hook. f. Fl. Brit. Ind. V, p. 31.

Hab. *Kurile Islands* (*ex* Pallas). *Etorofu*, at Furubetsu, Nobori and Shibetoro.

Distrib. Arctic and alpine regions of Europe, Asia and North America. In Japan it extends southward to the alpine district of the main island; and in western North America to Utah, Colorado and Nevada.

226. Polygonum amphibium, L. Sp. p. 517; Meisner in DC. Prodr. XIV, p. 115; Ledeb. Fl. Ross. III, p. 520; Hook. Fl. Bor.-Am. II, p. 131; F. Schm. Fl. Sach. p. 168; Hook. f. Fl. Br. Ind. V, p. 34.

Hab. *Etorofu*, at Rausu.

Distrib. Europe, northern Asia, south to western Himalaya, Manchuria and the northern part of Yezo; northern North America to southern California, and along the Rocky Mountains to Mexico, and eastward in the Northern States; also in southern Africa.

227. Polygonum Weyrichii, F. Schm. in Max. Prim. Fl. Amur. p. 235, Fl. Sach. p. 169. —Var. **alpinum**, Max.! in Fr. & Sav. Enum. I, p. 402, and Mél. Biol. IX, p. 617. *P. polymorphum*, var. *lapathifolium*, F. Schm.? in Max. Prim. p. 234.

Hab. *Shikotan*, on the hillsides. *Etorofu*, at Shana and Shibetoro.

The Kurile plant coincides exactly with the Fuji specimen collected by Tschonoski, except in size. It is about two to three feet high, and the leaves are more distantly placed. *P. tripterocarpum*, A. Gray, in MS. [Ochotsk Sea (J. Small); Arakamtschetchene Island, Bering Straits (Wright); Plover Bay, eastern Siberia (Dall)], approaches our plant nearest in the characters of its flowers and fruit. The leaves are linear-lanceolate, short-petioled or subsessile, usually crowded two or three together at the nodes, smooth or sometimes slightly hairy on the veins beneath, ciliate and somewhat revolute at the margins; sheath entire; pilose, especially at the base. (See Rothrock, Fl. Alaska, p. 453.)

Distrib. Alpine districts of middle and northern Japan; Saghalin, and northeastern Manchuria? In Japan the typical form is found only in the volcanic districts.

228. **Rumex Acetosa**, L. Ledeb.; Fl. Ross. III, p. 510; Meisner in DC. Prodr. XIV, p. 64; Reg. & Til. Fl. Och. p. 74; Fr. & Sav. Enum. I, p. 395; Hook. f. Fl. Brit. Ind. V, p. 60.

Hab. *Etorofu*, at Tsurubetsu and Shana.

Distrib. Europe, northern Asia, western Himalaya, Japan from Yezo to Loochoo, and Alaska.

229. **Rumex graminifolius**, Lamb. in Trans. Linn. Soc. X, p. 264, t. 10; Ledeb. Fl. Ross. III, p. 512; Meisner in DC. Prodr., XIV, p. 64. *R. Acetosella* var. *graminifolia*, Schrenk, Reise durch d. Tundr. d. Samoj. II, p. 519; Trautv. Pl. Sib. Bor. p. 99, and Fl. Ter. Tschuk. p. 32.

Hab. *Kurile Islands* (*ex* Pallas).

Distrib. Arctic Russia, northern Siberia to Tschuktches-land, Kamtschatka and adjacent islands.

URTICACEÆ.

230. **Ulmus campestris**, Sm. Eng. Bot. t. 1886; Planch. in Ann. Sc. Nat. ser. 3, X, p. 272, and DC. Prodr. XVII, p. 156; Trautv. in Max. Fl. Amur. p. 247; Max. Mél. Biol. IX, p. 22; F. Schm. Fl. Sach. p. 174; Fr. & Sav. Enum. 1, p. 431; Georgi, Beschr. d. Russ. R., III, 4, p. 828; Ledeb. Fl. Ross. III, p. 646.

Hab. "Auf der nächsten Kurilischen Insel" (*ex* Georgi).

Distrib. Middle and southern Europe, northern Africa, northern Asia to Manchuria, Saghalin and Japan.

231. **Urtica dioica**, L. Sp. p. 984; Ledeb. Fl. Ross. III, p. 637; Weddell in DC. Prodr. XVI, p. 50.—Var. **angustifolia**, Ledeb. Fl. Alt. VI, p. 240; Weddell, l. c., p. 52; Max. Mél. Biol. IX, p. 619; Fr. & Sav. Enum. I, p. 437.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Middle and southern Japan; Corea, northern China, Manchuria, eastern Siberia, Transbaikal, Dahuria. Altai Mountains to Russia. Also found in Mexico.

Var. **platyphylla**, Weddell, l. c., p. 51; Max. Mél. Biol. IX, p. 620. *U. platyphylla*, Wedd. Monog. p. 86. *U. dioica*, F. Schm. Fl. Sach. p. 174.

Hab. *Shikotan*, on hillsides. *Etorofu*, common around Furubura, Shibetoro, and other places.

Distrib. Very common in northern Japan; southern Saghalin and Kamtschatka.

CUPULIFERÆ.

232. Betula alba, L., subsp. **latifolia**, var. **Tauschii** Regel! in Bull. Mosc. 1865, p. 399, t. 7, f. 11–14, and in DC. Prodr. XVI, p. 165; Fr. & Sav. Enum. I, p. 455.

Hab. Etorofu, at Shibetoro, and Arimoi.

Distrib. Middle and northern Japan, Manchuria and Siberia, at Nasimovo, and by Lake Baical.

233. Betula Ermani, Cham. in Linnæa, VI, p. 537, t. 6, f. D; Ledeb. Fl. Ross. III, p. 653; Trautv. & Mey. Fl. Och. p. 83; Reg. & Til. Fl. Ajan. p. 119; Trautv. in Max. Prim. Fl. Amur. p. 252; Regel, in DC. Prod. XVI, p. 176.—Var. **typica**, Reg. Bull. Mosc. 1865, p. 415; Max. Mél. Biol. XII, p. 923.

Hab. Etorofu, at Furubetsu and Nobori on the Arimoi side.

Distrib. Aleutian Islands, Kamtschatka, the Kurile Islands, and Yezo; Nemuro! and Saruru Sands!

The species is distributed in several forms in eastern Siberia, Kamtschatka and adjacent islands, Manchuria, Saghalin, and northern and middle Japan.

234. Alnus viridis, DC. Fl. Fr. III, p. 304.—Var. **sibirica**, Regel in Bull. Mosc. 1865, p. 422, and in DC. Prodr. XVI, p. 182; Fr. & Sav. Enum. I, p. 456. *Alnaster fruticosus*, Ledeb. Fl. Ross. III, p. 655; Trautv. & Mey. Fl. Och. p. 85; Trautv. in Max. Fl. Amur. p. 257; F. Schm. Fl. Sach. p. 175.

Hab. Kurile Islands (*ex* Pallas). *Etorofu*, at Nobori, on the Arimoi side.

Distrib. Alpine districts of Europe; Siberia from the Ural to Kamtschatka; Dahuria, Manchuria, Saghalin, northern and middle Japan, the Aleutian Islands, northern North America and Greenland.

235. Alnus incana, Willd. Sp. IV, p. 335.—Var. **hirsuta**, Spach, Rev. Bet. in Ann. Sc. Nat. ser. 2, XV, p. 207; Ledeb. Fl. Ross. III, p. 656; Reg. in Bull. Mosc. 1865, p. 434, and in DC. Prodr. XVI, p. 189; Trautv. in Max. Fl. Amur. p. 258; F. Schm. Fl. Sach. p. 175.

Hab. Shikotan, on hillsides. *Kurile Islands* (*ex* Georgi).

Distrib. Yezo, Saghalin, Kamtschatka, eastern Siberia, Manchuria and Dahuria.

The species is widely distributed in Europe, northern temperate Asia and North America.

236. Quercus grosseserrata, Blume, Ann. Mus. Lugd.-Bat. I, p. 306; DC. Prodr. XVI, p. 16. *Q. crispula*, var. *grosseserrata*, Miq. Ann. Mus. Lugd.-Bat. I, p. 104; Fr. & Sav. Enum. I, p. 446.

Hab. Etorofu, at Furubetsu and Nobori on the Arimoi side.

Distrib. Japan.

The absence of fruit in the original specimens very naturally led Miquel to unite this species with *Q. crispula*, for there is certainly a close resemblance in their leaves. The fruit of *Q. crispula* is, however, very different from that of *Q. grosseserrata*. In the former the cup is deeper, embracing about half the cylindric nut, falling off with it when ripe; while in the latter the cup is hemispherical, enclosing about one-third of the ovoid-oblong nut which falls off free when ripe.

An examination of a very large number of specimens from different parts of Japan, Manchuria and China, shows a great similarity between *Q. grosseserrata* and *Q. mongolica*, Fisch., of Saghalin and the main lands. There are slight differences in the characters of the cup-scales and of the foliage, but scarcely more than sufficient to make them merely varieties of one species.

SALICACEÆ.

237. Salix Caprea, L. Sp. p. 1020; Anders. in DC. Prodr. XVI, 2, p. 222; Ledeb. Fl. Ross. III, p. 609; Max. Fl. Amur. p. 243; F. Schm. Fl. Sach. p. 173; Reg. Tent. Fl. Uss. p. 131; Trautv. & Mey. Fl. Och. p. 78; Regel & Tiling, Fl. Ajan. p. 117.

Hab. *Shikotan*, on hillsides. *Etorofu*, at Furubetsu and Nobori.

Distrib. Europe, western Asia across the northern and central portions to eastern Siberia, Manchuria, Saghalin and northern Japan.

238. Salix stipularis, Sm. Fl. Brit. II, p. 1069; Ledeb. Fl. Ross. III, p. 605; Anders. in DC. Prodr. XVI, 2, p. 266; Turcz. Fl. Baic.-Dah. II, p. 107; Max. Prim. Fl. Amur. p. 243; F. Schm. Fl. Sach. p. 172.

Hab. *Etorofu*, between Arimoi and Shana.

Distrib. Europe; northern Asia to Manchuria, Saghalin and Yezo.

239. Populus tremula, L. Sp. p. 1034.—Var. **villosa**, Wesmael in DC. Prodr. XVI, 2, p. 325; Max. Fl. As.-Or. Frag. p. 49; Fr. & Sav. Enum. I, p. 463. *P. villosa*, Lange. in Reichb. Icon. XI, p. 30, t. 617, f. 1273.

Hab. *Etorofu*, near Tsurubetsu and at Shibetoro.

Distrib. Middle Europe; northern and middle Japan. The species is distributed over the greater part of temperate Europe, northern Africa, and northern Asia to Manchuria and Saghalin.

EMPETRACEÆ.

240. Empetrum nigrum, L. Sp. p. 1022; Ledeb. Fl. Ross. III, p. 555; DC. Prodr. XVI, 1, p. 25; Pallas, Fl. Ross. I, 2, p. 49; F. Schm. Fl. Sach. p. 171; Fr. & Sav. Enum. I, p. 429.

Hab. *Kurile Islands* (*ex* Pallas). *Shumshu* (J. Akakabe, and Hakodate Museum). *Etorofu*, at Shibetoro. *Kunajiri* (middle Nakamura).

Distrib. Arctic and alpine regions of the northern hemisphere; the Andes and antarctic America, extending to the islands of Tristan d'Acunha.

GYMNOSPERMÆ.

CONIFERÆ.

241. Juniperus communis, L.; Pall. Fl. Ross. I, 2, p. 12, t. 54; Ledeb. Fl. Ross. III, p. 684; Carr. Conifér. p. 21; Parlat. in DC. Prodr. XVI, 2, p. 479; Max. Fl. Amur. p. 260; F. Schm. Fl. Sach. p. 178; Masters, Conifers of Japan, p. 497.

Hab. *Kurile Islands* (*ex* Pallas).

Distrib. Europe, western Himalaya, Siberia, Kamtschatka, Dahuria, Manchuria, Saghalin, British America to New Mexico and North Carolina.

242. **Taxus cuspidata**, Sieb. & Zucc. Fl. Jap. II, p. 61, t. 128; Miq. Prol. Fl. Jap. p. 333; Parlat. in DC. Prodr. XVI, 2, p 502; Fr. & Sav. Enum., I, p. 472; Masters, Con. Jap. p. 499. *Taxusbaccata*, var. *microcarpa*, Trautv. in Max. Prim. Fl. Amur, p. 259; F. Schm. Fl. Sach. p. 175.

Hab. *Etorofu*, at Shibetoro. *Kurile Islands*, from *Ketoi*, the fifteenthisland southward (*ex* Pallas, N. Nord. Beitr. IV, p. 128).

Distrib. Japan, Saghalin and Manchuria.

I can detect no differences between the Japanese plant and that of Saghalin and Manchuria in their characters of leaves and fruits. The ripened seeds in both cases are oval-orbicular, compressed, with two or rarely three ridges toward the apex, obtusely short-mucronate, chestnut-brown, and about 5 1-2 mm. long. *T. brevifoliâ*, Nutt., of western North America, is most closely related to our plant.

243. **Pinus parviflora**, Sieb. & Zucc. Fl. Jap. II, p. 27, t. 115; Parlat. in DC. Prodr. XVI, 2, p. 404; Fr. & Sav. Enum. I, p. 464; Engelm. Revision, p. 15, adnot. 2 (Bot. Works, p. 370); Masters, Con. Jap. p. 504.

Hab. *Kurile Islands* (*fide* Siebold).

Distrib. Middle and northern Japan; also in Nutka Island (*fide* Engelm.).

244. **Pinus pumila**, Regel in Regel, Rach und Herder, Pl. Pawl., no. 54; Glehn in Act. H. Petrop. IV, p. 87; F. Schm. Fl. Sach. p. 177. *P. Cembra*, var. *pumila*, Pall. Fl. Ross. I, 1, p. 4, t. 2, f. E–H; Ledeb. Fl. Ross. III, p. 674; Turcz. Fl. Baic.-Dah. II, p. 141; Parl. in DC. Prodr. XVI, 2, p. 403; Max. Prim. Fl. Amur. p. 262; Masters, Con. Jap. p. 505.

Hab. *Kurile Islands* (*ex* Pallas, etc.). Shumshu (Akakabe). *Etorofu*, at Furubetsu and Nabori.

Distrib. Northern and eastern Siberia, Dahuria, Manchuria, Saghalin, northern Japan, Kamtschatka, and arctic Alaska.

245. **Picea obovata**, Ledeb. Fl. Alt. IV, p. 210; Carr. Conif. p. 253; Max. Prim. Fl. Amur. p. 261; Regel, Tent. Fl. Uss. p. 136; Masters, Con. Jap. p. 506. *Pinus orientalis*, Ledeb. Fl. Ross. III, p. 671 (in part). *Pinus obovata*, Antoine, Conif. p. 96, t. 37, f. 2. *Pinus Abies*, Pall. Fl. Ross. I, 1, p. 6 (excl. synon.).

Hab. *Kurile Islands?* (*ex* Pallas).

Distrib. Northeastern Europe, from the Ural and Altai regions to eastern Siberia, Dahuria and Manchuria.

246. **Larix dahurica**, Turcz. in Bull. Mosc. 1838, p. 101; Carr. Conif. p. 270; Regel, Rev. Sp. Gen. Lar. p. 59, n. 6. *L. kamtschatica*, Carr. l. c., p. 279. *Pinus dahurica*, Fisch. in Endl. Conif. p. 126; Ledeb. Fl. Ross. III, p. 673.

Var. **japonica**, Max.! in Regel, l. c., p. 60; Gartenf. 1871, t. 685, f. 5.

Hab. *Shikotan.* *Etorofu*, at Furubetsu and Arimoi. Pallas mentions in his Neue Nordische Beiträge, IV, p. 133, that a larch occurs in Etorofu, growing only in the southern half of the island, and also in Kunashiri.

This variety seems to be restricted to the southern Kuriles and northeastern Yezo. The plant has been transplanted from Etorofu to the temple grounds of southern Yezo. Professor Maximowicz's original specimens are from a cultivated tree in Hakodate. The plant is distinct from *Larix japonica*, Murr. (*L. leptolepis*, var. *Murrayana*, Max.), which grows on Mt. Fuji.

The species is distributed through arctic and eastern Siberia, Dahuria, Manchuria, northern China, Saghalin, extreme northern Japan, and Kamtschatka.

MONOCOTYLEDONES.

ORCHIDACEÆ.

247. Microstylis monophyllos, Lindley, Gen. & Spec. Orchid. p. 19; Ledeb. Fl. Ross. IV, p. 50; Hook. Fl. Bor.-Am. II, p. 193; Gray, Man. 5th ed. p. 509; Turcz. Fl. Baic.-Dah. II, fasc. 1, p. 173; Regel & Tiling, Fl. Ajan. p. 121. *Ophrys monophyllos*, L. Sp. p. 947. *Malaxis monophyllos*, Swartz in Act. Bot. Stockh. 1800, p. 234; Franchet, Pl. Dav., p. 294. *Malaxis diphyllos*, Cham. in Linnæa, III, p. 34 (*fide* Turcz.). *Microstylis japonica*, Matsumura? in Cat. Pl. Herb. Univ. Tokyo, p. 189.

Hab. *Shikotan*, in exposed grassy places on top of cliffs. *Etorofu*, at Furubetsu.

Distrib. Northern and middle Europe; northern Asia, from the Ural and Altai regions to eastern Siberia, Dahuria and northern China; Yezo (Böhmer, 2-leaved form); Fuji-yama? (Yatabe); the Aleutian Islands; and British America to Ill. and Penn.

248. Liparis Schmidtii, Benth. in Journ. Linn. Soc. XVIII, p. 294, and in Benth. & Hook. Gen. Pl. III, p. 495. *Ephippianthus Schmidtii*, Reichb. f. in Regensb. Flora, 1868, p. 33, in F. Schm. Fl. Sach., t. 6, f. 1–7, and Xenia Orchid. II, p. 188, t. 180. *E. sachalinensis*, Reichb. f. in F. Schm. Fl. Sach. p. 180; Matsumura, Cat. Pl. Herb. Univ. Tokyo, p. 190.

Hab. *Etorofu*, in mossy places on Nobori, growing with *Linnæa borealis*.

Distrib. Southern Saghalin and the Kuriles, Yezo and alpine districts of middle Japan.

249. Orchis aristata, Fisch. ex Lindl. Orchid. p. 262; A. Gray, Bot. Jap. p. 409; F. Schm. Fl. Sach. p. 181. *O. latifolia*, var. *Beeringiana*, Cham. & Schlecht. in Linnæa, III, p. 26; Hook. & Arn. Beech. Voy. p. 117; Fr. & Sav. Enum. II, p. 29.

Hab. *Kurile Islands!* (*ex* Max.). *Etorofu*, at Rubetsu.

Distrib. Middle and northern Japan, southern Saghalin and Kamtschatka; the Aleutian Islands and Alaska.

250. Habenaria conopsea, Benth. in Benth. & Hook. Gen. Pl. III, p. 625; Hook. Stud. Fl. Brit. Isl. 3rd ed. p. 393. *Gymnadenia conopsea*, R. Br. in Hort. Kew. V, p. 191; Ledeb. Fl. Ross. IV, p. 64; Turcz. Fl. Baic-Dah. II, 1, p. 179; Lindl. Orchid. p. 275; F. Schm. Fl. Sach. p. 181; Reg. & Til. Fl. Ajan. p. 121; Franchet, Pl. Dav. p. 294.

Hab. *Shikotan*, on hillsides. *Etorofu*, at Rubetsu.

Distrib. In arctic and temperate Europe; western and northern Asia to eastern Siberia, northern China; Manchuria; Saghalin and northern Japan. As var. *ussuriensis*, in southern Manchuria and middle Japan.

251. Habenaria ussuriensis, Max. Mél. Biol. XII, p. 551 (under *Platanthera*). *P. tipuloides*, var. *ussuriensis*, Regel & Maack, Fl. Uss. p. 143, t. 10, f. 7–9; Fr. & Sav. Enum. II, p. 32.

Hab. *Etorofu*, at Furubetsu and Shibetoro.

Distrib. Southeastern Manchuria; Japan, from Kiusiu to northern Yezo and southern Kuriles.

My plant corresponds exactly with a specimen in the Gray Herbarium from Maximowicz, collected in northern Japan. The plant is much larger than that represented by Regel in his Tentamen Floræ Ussuriensis.

252. Habenaria (*Platanthera*) **minor**, Reichb. f. Orch. Jap. Symb. in Bot. Zeit. 1878, p. 75. *H. japonica*, var. *minor*, Miq. Prol. Fl. Jap. p. 139.

Hab. *Etorofu*, near Rubetsu in boggy places, growing with *Parnassia palustris*.

Miquel does not state the locality for his plant, but it may probably be somewhere in the alpine districts of middle or northern Japan. Tschonoski collected the same plant in Nambu. The flower of the Etorofu plant was greenish in color when collected. According to Reichenbach the plant is related to *Platanthera mandarina* and *P. tipuloides*.

IRIDEÆ.

253. Iris setosa, Pall. in Willd. herb.; Ledeb. Fl. Ross. IV, p. 96; A. Gray, Bot. Jap. p. 412; F. Schm. Fl. Sach. p. 184; Trautv. Pl. Sib. Bor. p. 114; Max. Mél. Biol. X, p. 713; Fr. & Sav. Enum. II, p. 42.

Hab. *Kurile Islands!* (*ex* Max.). *Shikotan*. *Etorofu*, at Rubetsu and Shibetoro.

Distrib. Eastern Siberia, Manchuria, Saghalin, Yezo, Kamtschatka, the Aleutian Islands and Alaska.

LILIACEÆ.

254. Polygonatum officinale, All. Fl. Pedemont. I, p. 131; Ledeb. Fl. Ross. IV, p. 123; Baker, Journ. Linn. Soc. XIV, p. 554; Max. Mél. Biol. XI, p. 846.—Var. **Maximowiczii** Max. l. c. *P. Maximowiczii*, F. Schm. Fl. Sach. p. 185; Baker, l. c., p. 556. *P. sp. indeterm*, Max. Fl. Amur. p. 275. *P. officinale*, var. *pluriflorum*, Miq. Prol. p. 312.

Hab. *Etorofu*, at Furubetsu.

Distrib. Japan, Saghalin, Manchuria and northern China.

The species is widely distributed in Europe and in temperate Asia.

255. Polygonatum humile, Fisch. in Max. Prim. Fl. Amur. p. 275; F. Schm. Fl. Sach. p. 185; Fr. & Sav. Enum., II, p. 55; Max. Mél. Biol. XI, p. 845. *P. officinale*, var. *humile*, Baker in Journ. Linn. Soc. XIV, p. 554.

Hab. *Etorofu*, at Rausu.

Distrib. Middle and northern Japan, Saghalin, Manchuria and Dahuria.

256. Streptopus amplexifolius, DC. Fl. Fr. III, p. 174; Kunth, Enum. IV, p. 205; Max. Fl. Amur. p. 273; F. Schm. Fl. Sach. p. 185; Fr. & Sav. Enum. II, p. 51; Watson, Proc. Am. Acad. XIV, p. 269.

Hab. *Etorofu*, near Tsurubetsu.

Distrib. Central Europe, northwestern China, Manchuria, Saghalin, northern and middle Japan, Kamtschatka; Alaska to northern California and New Mexico, across the north temperate region to the Atlantic coast, from Pennsylvania to Greenland.

257. **Maianthemum bifolium**, DC. Fl. Fr. III, p. 177; Kunth, Enum. V, p. 147; Baker, Journ. Linn. Soc. XIV, p. 562; Watson, Proc. Am. Acad. XIV, p. 246.—Var. **kamtschaticum**, Trautv. & Mey. Fl. Och. p. 92; F. Schm. Fl. Sach. p. 185; A. Gray, Bot. Jap. p. 414; Max. Fl. Amur. p. 276. *Smilacina bifolia*, Desf., var. *kamtschatica*, Gmel. Fl. Sib. I, p. 35; Ledeb. Fl. Ross. IV, p. 127; Fr. et Sav. II, p. 55.

Hab. *Etorofu*, at Furubetsu and Shibetoro.

Distrib. Manchuria, Saghalin, northern Japan, eastern Siberia, Kamtschatka, the Aleutian Islands, and from Alaska to California (var. *dilatatum*, Watson, l. c.).

258. **Convallaria majalis**, L. Sp. p. 314; Kunth, Enum. V, p. 131; Ledeb. Fl. Ross. IV, p. 126; Baker, l. c., p. 552; Watson, l. c., p. 242; Max. Fl. Amur. p. 276; Franchet, Pl. Dav. p. 303; F. Schm. Fl. Sach. p. 185; Fr. & Sav. Enum. II, p. 54. *C. Keiskei*, Miq. Prol. p. 312 (*ex* Baker).

Hab. *Etorofu*, at Rubetsu.

Distrib. Europe, northern Asia to Manchuria, northern China, Japan, Saghalin, and Corea. In North America, in the Alleghanies (Virginia to South Carolina).

259. **Hemerocallis Middendorffi**, Trautv. & Mey. Fl. Och. p. 94; Max. Prim. Fl. Amur. p. 285; Regel, Fl. Uss. p. 153; F. Schm. Fl. Sach. p. 187; Regel, Gartenf. 1866, p. 292, t. 522; Baker, Journ. Linn. Soc. XI, p. 359.

Hab. *Etorofu*, at Tsurubetsu, and Rubetsu.

Distrib. Eastern Siberia in the Ochotsk district, Manchuria, Saghalin and northern Japan.

260. **Allium Victorialis**, L. Sp. p. 295; Ledeb. Fl. Ross. IV, p. 184; Kunth, Enum. IV, p. 432; A. Gray, Bot. Jap. p. 416; Regel, Alliorum Monog. p. 170, and Allii Sp. Asiæ, pp. 294, 346; Fr. & Sav. Enum. II, p. 78.

Hab. *Etorofu*, at Rubetsu and Shibetoro.

Distrib. In alpine regions of southern and middle Europe; Siberia in the Ural, Altai, Baikal and eastern districts; Himalaya; western and northern China, Mongolia, Dahuria, Manchuria, Saghalin, middle and northern Japan, and Kamtschatka.

261. **Lilium cordifolium**, Thunb. in Linn. Trans. II, p. 332; Sieb. & Zucc. Fl. Jap. I, p. 33, tt. 13, 14; Miq. Ann. Mus. Lugd.-Bat. III, p. 157; Baker, Journ. Linn. Soc. XIV, p. 227; Fr. & Sav. Enum. II, p. 72; Bot. Mag. t. 6337; Elwes, Monog. Gen. Lilium, t. 1. *Hemerocallis cordata*, Thunb. Fl. Jap. p. 143. *Lilium Glehni*, F. Schm. Fl. Sach. p. 187.

Hab. *Kurile Islands* (*ex* Siebold).

Distrib. Saghalin, Japan, China.

262. **Lilium dahuricum**, Gawl. Bot. Mag. t. 1210; Kunth, Enum. IV. p. 264; Baker, Journ. Linn. Soc. XIV, p. 238; Elwes, Monog. Gen. Lil. t. 21; Fr. & Sav. Enum. p. 70. *L. spectabile*, Link, Enum. I, p. 321; Ledeb. Fl. Ross. IV, p. 151; Max. Fl. Amur. p. 280; F. Schm. Fl. Sach. p. 186; A. Gray, Bot. Jap. p. 415.

Hab. *Etorofu*, on the sandy beach near Rausu.

Distrib. Northern and eastern Siberia to the Baikal and Altai regions; Manchuria, Saghalin, northern Japan and Kamtschatka.

263. Lilium avenaceum, Fisch. ex Max. in Gartenf. 1865, p. 290, t. 485; F. Schm. Fl. Sach. p. 186; Baker, Journ. Linn. Soc. XIV, p. 245; Elwes, Monog. t. 35. *L. Martagon*, Led. Fl. Ross. IV, p. 149 (in part). *L. medeoloides*, Fr. & Sav. Enum. II, p. 63 (in part).

Hab. *Kurile Islands* (hb. Fisch. *ex* F. Schmidt). *Etorofu*, at Tsurubetsu, and Shibetoro.

Distrib. Middle and northern Japan, Kamtschatka, Saghalin, southeastern Manchuria.

264. Fritillaria kamtschatcensis, Gawl. in Bot. Mag. t. 1216; Ledeb. Fl. Ross. IV, p. 147: Trautv. & Mey. Fl. Och. p. 93; Hook. Fl. Bor.-Am. II, p. 181, t. 193, f. A.; Max. Fl. Amur. p. 279; F. Schm. Fl. Sach. p. 186; Baker, Journ. Linn. Soc. XIV, p. 273; Watson, Proc. Am. Acad. XIV, p. 259; Fr. & Sav. Enum. II, p. 62.

Hab. *Kurile Islands* (*ex* Pallas). *Etorofu*, near Tsurubetsu.

Distrib. Middle and northern Japan, Saghalin, Manchuria, eastern Siberia, Kamtschatka, the Aleutian Islands, and from Alaska to Vancouver Island.

265. Disporum smilacinum, A. Gray, Pl. Jap. p. 321, and Bot. Jap. 414; Miq. Prol. p. 311; Fr. & Sav. Enum. II, p. 52; Baker, Journ. Linn. Soc. XIV, p. 590; Max. Mél. Biol. XI, p. 858.

Hab. *Etorofu*, near Furubetsu.

Distrib. Japan, from the northern part of Yezo to Kiusiu. As var. *viridescens*, Max., in Manchuria and northern China.

266. Clintonia udensis, Trautv. & Mey. Fl. Och. p. 92, t. 30; Reg. & Til. Fl. Ajan. p. 123; Max. Fl. Amur. p. 278; F. Schm. Fl. Sach. p. 186; Fr. & Sav. Enum. II, p. 50; Baker, Journ. Linn. Soc. XIV, p. 584; Franchet, Pl. Dav. p. 309; Max. Fl. As. Or. Frag. p. 62.

Hab. *Etorofu*, on the Arimoi side of Nobori.

Distrib. Eastern Siberia in the Ochotsk district, Manchuria, Mongolia, northern China, Saghalin, and northern and middle Japan.

267. Trillium kamtschaticum, Pall. in Herb. Lambert, *ex* Pursh, Fl. Am. Sept. I, p. 246. *T. obovatum*, Pursh, etc. (excl. pl. Amer.); Ledeb. Fl. Ross. IV, p. 121; Max. Fl. Amur. p. 273, and Mél. Biol. XI, p. 861; F. Schm. Fl. Sach. p. 185. *T. erectum*, var. *album*, A. Gray, Pl. Jap. p. 320. *T. erectum*, var. *japonicum*, A. Gray, Bot. Jap. p. 413; Fr. & Sav. Enum. II, p. 56.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Kamtschatka, Saghalin, eastern Manchuria and northern Japan.

Trillium obovatum of Pursh, which was described from specimens collected in Canada near Montreal, is a doubtful species and has never been verified from the same region. Dr. S. Watson thinks that the plant may be a form of *T. erectum*. According to the same authority *T. obovatum* of Hooker from British Columbia is *T. ovatum*, Pursh.

Our Asiatic plant, as fully characterized by Professor Maximowicz, differs distinctly

from the American *T. erectum*, *ovatum*, and *grandiflorum*, in its broader petals and shorter stigmas. The tip of the ovary is dark purple in color, and the petal is always white. *Trillium Tschonoskii*, Max., which grows also in Yezo, has the ovary greenish throughout. Its petals are white with a slight reddish tinge, and the anther is about as long as the filament. These two species have been much confused in Japan.

268. **Veratrum album**, L. Sp. p. 1044; Ledeb. Fl. Ross. IV, p. 208; Kunth, Enum. IV, p. 186; Turcz. Fl. Baic.-Dah. II, p. 229; Regel, Fl. Uss. p. 153; Baker, Journ. Linn. Soc. XVII, p. 470.

Hab. *Kurile Islands* (*ex* Turcz.).

The species is distributed through Europe and northern Asia to Kamtschatka and adjacent islands, and in Japan under different varieties and forms. According to Baker, as *V. Eschscholtzii* and *V. viride* in North America.

JUNCACEÆ.

269. **Juncus balticus**, Dethard; Willd. in Mag. d. n. f. Fr. in Berlin, 1809, p. 293; Kunth, Enum. III, p. 317; Ledeb. Fl. Ross. IV, p. 222; Engelm. N. Am. Juncus, p. 441; Trautv. & Mey. Fl. Och. p. 97; F. Schm. Fl. Sach. p. 189; Fr. & Sav. Enum. II, p. 533; Buchenau in Engler's Bot. Jahrb. VII, p. 161. *J. glaucus*, var. *yokoscensis*, Fr. & Sav. Enum. II, p. 97.

Hab. *Etorofu*, at Tsurubetsu.

Distrib. In the coast region of northern Europe to the arctic circle; in North America along the Atlantic coast from Newfoundland to Massachusetts, thence in the interior to Pennsylvania and across the lake regions to the Rocky Mountains and California and northwestward to Alaska, and the Aleutian Islands; eastern Siberia, Saghalin and northern and middle Japan.

270. **Juncus effusus**, L. Sp. p. 326; Thunb. Fl. Jap. p. 145; Engelm. N. Amer. Junc. p. 443; Watson, Bot. Calif. II, p. 206; A. Gray, Bot. Jap. p. 417; F. Schm. Fl. Sach. p. 189. *J. communis*, E. Mey. Synop. Junc. p. 12; Kunth, Enum. p. 320; Ledeb. Fl. Ross. IV, p. 221; Fr. & Sav. Enum. II, p. 97.

Hab. *Etorofu*, at Furubetsu.

Distrib. Widely spread in Europe, northern Africa, temperate Asia and America, New Zealand and Australia.

271. **Juncus articulatus**, L. Sp. p. 327; Ledeb. Fl. Ross. IV, p. 225; Engelm. N. Am. Junc. p. 458; Max. Fl. Amur. p. 293; Regel, Fl. Uss. p. 157; F. Schm. Fl. Sach. p. 189 (var.!). *J. lampocarpus*, Ehrh. Calam. no. 126; Buchenau in Engl. Bot. Jahrb. VII, p. 166.

Hab. *Etorofu*, at Arimoi.

My specimens agree exactly with the Saghalin plant collected by Schmidt. The cymes are terminal and suberect; flowers few in a cluster, also suberect. They agree well with Fries's *J. articulatus*, var. *subatratus*, which is placed under *J. lampocarpus*, Ehrh., by Buchenau. The species is very widely distributed through Europe, northern Africa, temperate Asia and eastern North America.

272. Luzula pilosa, Willd. Enum. I, p. 393; E. Mey. in Ledeb. Fl. Ross. IV, p. 214; Hook. Fl. Bor.-Am. II, p. 188; Turcz. Fl. Baic.-Dah. II, 1, p. 232; Miq. Prol. p. 329; Fr. & Sav. Enum. II, p. 96; Buchenau, l. c., p. 170.

Hab. *Etorofu*, at Furubetsu.

Distrib. Europe, northern Africa; temperate Asia and North America.

273. Luzula campestris, DC. Fl. Fr. III, p. 161; E. Mey. in Ledeb. Fl. Ross. IV, p. 219; Kunth, Enum. III, p. 307; Max. Prim. Fl. Amur. p. 292; F. Schm. Fl. Sach. p. 189; Fr. & Sav. Enum. II, p. 97.

Hab. *Etorofu*, at Furubetsu.

Distrib. Widely distributed over the temperate and colder regions of the globe.

Var. **congesta**, E. Mey. Synop. Luzul. p. 18; Linnæa, III, p. 376. *L. multiflora*, var. *congesta*, Koch, Synop. ed. 1, p. 734. *L. congesta*, Lej. Spa, p. 168. *L. campestris*, DC., var. *capitata*, Miq.! Prol. Fl. Jap. p. 329; Fr. & Sav. Enum. II, p. 97. *L. comosa*, var. *congesta*, Watson, Bot. Calif. II, p. 202.

Hab. *Shikotan*, on hillsides.

Our plant agrees in every respect with that from California; and it is also hardly distinguishable from the European specimens. It is often found in Japan, growing together with other forms of *L. campestris*. The plant seems to have as wide a range of distribution as the typical form. In North America, however, it is known only from the coast region of California to Alaska.

ARACEÆ.

274. Lysichiton kamtschatcensis, Schott, Gen. Aroid. t. 91, Prodr. p. 421; F. Schm. Fl. Sach. p. 178; Engl. in DC. Monog. II, p. 210; Fr. & Sav. Enum. II, p. 9. *Dracontium camtschatcense*, L. Sp. ed. 2, p. 1372. *Symplocarpus camtschaticus*, Salisb.; Bong. Veg. Sitch. p. 50; Hook. Fl. Bor.-Am. II, p. 169; Ledeb. Fl. Ross. IV, p. 12; Max. Fl. Amur. p. 266. *Arctiodracon japonicum*, A. Gray, Bot. Jap. p. 409; *Lysichiton japonicum*, Schott in Miq. Ann. Mus. Lugd. Bat. I, p. 96; Fr. & Sav. Enum. II, p. 9.

Hab. *Etorofu*, at Furubetsu.

Distrib. Middle and northern Japan; Saghalin; northeastern Manchuria; eastern Siberia to the Ochotsk Sea; Kamtschatka; Aleutian Islands; Alaska to California.

CYPERACEÆ.

275. Carex microglochin, Wahlbg. Act. Holm. 1803, n. 9; Ledeb. Fl. Ross. IV, p. 269; Turcz. Fl. Baic.-Dah. II, 1, p. 257; Boott in Hook. Fl. Bor.-Am. II, p. 210, and Ill. Car. IV, p. 174, t. 589; Bailey, Syn. N. Am. Car. p. 61.

Hab. *Kurile Islands* (*ex* Boott).

Distrib. Arctic and alpine Europe; Caucasus, Altai, Dahuria, Baikal, Thibet, western Himalaya; Colorado; Greenland.

276. **Carex rotundata**, Wahlbg. Act. Holm. 1803, n. 78; Ledeb. Fl. Ross. IV, p. 301; Kunth, Enum. II, p. 451; Trautv. & Mey. Fl. Och. p. 99; Boott in Hook. Fl. Bor.-Am. II, p. 220; Bailey, Syn. p. 67.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Arctic and northern Europe; extreme eastern Siberia; arctic and northern North America; Greenland.

277. **Carex macilenta**, Fries, Summa Veg. p. 224; Anders. Cyp. Scand. p. 58, t. 4, f. 35; F. Schm. Fl. Sach. p. 193; Boott, Ill. IV, p. 147, t. 471.

Hab. *Etorofu*, at Shana.

Distrib. Lapland, Norway, Finland, Saghalin and the Kuriles.

278. **Carex Gmelini**, Hook. & Arn. in Beechey Voyage, p. 118, t. 27; Boott in Hook. Fl. Bor.-Am. II, p. 216; Ledeb. Fl. Ross. IV, p. 288; Trautv. & Mey. Fl. Och. p. 99; Reg. & Til. Fl. Ajan. p. 125; Max. Fl. Amur. p. 309; F. Schm. Fl. Sach. p. 193; Boott, Ill. IV, p. 137, t. 440; Bailey, Syn. p. 77.

Hab. *Etorofu*, at Tsurubetsu.

Distrib. Northern Japan (Yezo); Saghalin; eastern Manchuria; eastern Siberia around the Ochotsk Sea; Kamtschatka; the Aleutian Islands; arctic Alaska to Oregon.

279. **Carex vaginata**, Tausch, in Regensburg Flora, 1821, p. 557; Kunth, Enum. II, p. 451; Ledeb. Fl. Ross. IV, p. 291; Trautv. & Mey. Fl. Och. p. 99; Reg. & Til. Fl. Ajan. p. 125; Bailey, Syn. p. 117; Boott, Ill. IV, p. 148, t. 478. *C. falcata*, Turcz. Fl. Baic.-Dah, II, 1, p. 276; Max. Fl. Amur. p. 311; F. Schm. Fl. Sach. p. 194.

Hab. *Etorofu*, at Tsurubetsu.

Distrib. Arctic and northern Europe; Siberia, from the Baical district to the Ochotsk region; Manchuria, Saghalin and the Kuriles; arctic America to the Rocky Mountains and New York.

280. **Carex macrocephala**, Willd. Spreng. Syst. III, p. 808; Boott in Hook. Fl. Bor.-Am. II, p. 215, t. 216; A. Gray, Pl. Jap. p. 328; Regel, Fl. Uss. p. 164, t. 12, f. 8–12; F. Schm. Fl. Sach. p. 193; Fr. & Sav. Enum. II, p. 132; Boott, Ill. I, p. 27, t. 69; Bailey, Syn. p. 134.

Hab. *Shikotan.*

Distrib. Middle and northern Japan; Saghalin; Manchuria; Kamtschatka; north western coasts of America; Oregon and Washington Territory. It is also found in Corea.

281. **Carex transversa**, Boott in A. Gray, Pl. Jap. p. 324, and Ill. IV, p. 202; Miq. Prol. Fl. Jap. p. 357; Fr. & Sav. Enum. II, p. 149.

Hab. *Kurile Islands!* (*ex* Max.).

Distrib. Middle and northern Japan.

282. **Carex rhynchophysa**, C. A. Mey. Ind. Hort. Petrop. IX, p. 10; Ledeb. Fl. Ross. IV, p. 318; Turcz. Fl. Baic.–Dah. II, 1, p. 285; Trautv. & Mey. Fl. Och. p. 102; Max. Prim. Fl. Amur. p. 316; F. Schm. Fl. Sach. p. 197; Fr. & Sav. Enum. II, p. 155.

Hab. *Kurile Islands!* (*ex* Max).

Distrib. Northern and central Europe; throughout Siberia; Dahuria; Manchuria; Saghalin; middle and northern Japan.

GRAMINEÆ.

283. Phalaris arundinacea, L.; Trin. Phalar. p. 11; Hook. Fl. Bor.-Am. II, p. 234; Fr. & Sav. Enum. II, p. 157. *Digraphis arundinacea*, Trin. Fund. Agros. p. 127; Ledeb. Fl. Ross. IV, p. 454; Max. Fl. Amur. p. 326; F. Schm. Fl. Sach. p. 201.

Hab. *Etorofu*, at Tsurubetsu and Rubetsu.

Distrib. Widely distributed in the north temperate zone, extending to the Arctic region.

284. Hierochloe borealis, Rœm. & Schult. Syst. II, p. 513; Ledeb. Fl. Ross. IV, p. 407; Reg. & Til. Fl. Ajan. p. 126; Max. Fl. Amur. p. 322; F. Schm. Fl. Sach. p. 201; Fr. & Sav. Enum. II, p. 157.

Hab. *Etorofu*, at Rubetsu.

Distrib. Arctic, alpine and northern Europe, North America and Asia.

285. Alopecurus geniculatus, L., sub-sp. **fulvus**, Hook. f. Fl. of Brit. Isl. 3rd ed. p. 474. *A. fulvus*, Smith; Ledeb. Fl. Ross. IV, p. 464; F. Schm. Fl. Sach. p. 203; Franchet, Pl. Dav. p. 329. *A. geniculatus*, Thunb. Fl. Jap. p. 49; A. Gray, Pl. Jap. p. 328; Fr. & Sav. Enum. II, 158.

Hab. *Etorofu*, at Furubetsu.

The Japanese specimens in the Gray Herbarium, collected in different parts of the country (Nagasaki, Yokohama, Hakodate, Sapporo), are all referable to *A. fulvus*, Sm. They are all glaucous, and have inflated sheaths and yellow or orange-yellow anthers. The plant has been found in Saghalin, northern China, Hongkong, Himalaya, and Altai to Europe. Some of the specimens from northwest America can scarcely be distinguished from our plant.

286. Agrostis canina, L.; Trin. Agrostidea, p. 87; Ledeb. Fl. Ross. IV, p. 440; Reg. & Til. Fl. Ajan. p. 127; Max. Fl. Amur. p. 325; F. Schm. Fl. Sach. p. 201.

Hab. *Shikotan.* *Etorofu*, at Shara.

Distrib. Northern Japan, Saghalin, throughout northern Asia to Europe and Himalaya, northern and mountain districts of North America, South America, and Australasia.

287. Agrostis perennans, Tuckerm. in Sillim. Journ. 1843, p. 44; A. Gray, Manual, 5th ed. p. 611; Miq. Prol. Fl. Jap. p. 165; Fr. & Sav. Enum. II, p. 166. *A. Michauxii*, var. *clavata*, Trin. Uni- et Sesqui-f. p. 206; Bong. Veg. Sitcha, p. 170. *A. laxiflora*, F. Schm. Fl. Sach. p. 203. *A. scabra*, A. Gray, Pl. Jap. p. 328.

Hab. *Etorofu*, at Tsurubetsu and Nobori.

Our plant has flat leaves and greenish flowers, which are sometimes slightly tinged with a purplish color. The panicle is branched from about the middle, and is more or less scabrous, as also the keel of the glumes. The plant is just about intermediate in its general characters between *A. perennans* and *scabra*. A specimen from Saghalin, collected by F. Schmidt, coincides very closely with ours; so is also one named *A. Michauxii*, var. *clavata*, from Kamtschatka. The present form seems to occur also in northwestern America to Colorado (J. Wolf) and to the lake region.

288. Deschampsia flexuosa, Trin. in Mém. Ac. St.-Pét. 1836, p. 9; Ledeb. Fl. Ross. IV, p. 420; F. Schm. Fl. Sach. p. 202; Fr. & Sav. Enum. II, p. 172. *Aira flexuosa*, L.; Hook. Fl. Bor.-Am. p. 243; Trautv. & Mey. Fl. Och. p. 105.

Hab. *Etorofu*, at Shibetoro.

Distrib. Europe; western and northern Asia, northern and middle Japan, Saghalin, and the Ochotsk region; in North America, mostly on the Atlantic side, from Greenland to the northern Eastern States, and in Colorado; Falkland Islands.

289. **Phragmites communis**, Trin. Fund. Agr. p. 134; Turcz. Fl. Baic.-Dah. II, 1, p. 315; Fr. & Sav. Enum. II, p. 170. *Arundo Phragmites*, L.; Ledeb. Fl. Ross. IV, p. 393; Max. Prim. Fl. Amur. p. 321; F. Schm. Fl. Sach. p. 201.

Hab. *Shikotan.* *Etorofu*, at Tsurubetsu.

Distrib. Most widely distributed over the greater part of the globe.

290. **Melica nutans**, L.; Ledeb. Fl. Ross. IV, p. 399; Turcz. Fl. Baic.-Dah. II, p. 336; Max. Fl. Amur. p. 322; Reg. Fl. Uss. p. 169; F. Schm. Fl. Sach. p. 201; Fr. & Sav. Enum. II, p. 178.

Hab. *Shikotan.*

Distrib. Europe; northern Asia to Kamtschatka, Manchuria, Saghalin and Japan.

291. **Poa annua**, L.; Ledeb. Fl. Ross. IV, 377; Hook. Fl. Bor.-Am. II, p. 245; F. Schm. Fl. Sach. p. 200; Fr. & Sav. Enum. II, p. 174.

Hab. *Etorofu*, at Shana.

Distrib. Europe, northern Africa, temperate Asia. Naturalized in northern America, Australia, etc. A taller form of this species is apparently indigenous in Arizona, New Mexico, western Texas, etc. (Thurber).

292. **Poa pratensis**, L.; Ledeb. Fl. Ross. IV, p. 378; Reg. & Til. Fl. Ajan, p. 126; Max. Fl. Amur. p. 319; F. Schm. Fl. Sach. p. 200; Fr. & Sav. Enum. II, p. 174.

Hab. *Etorofu*, at Shibetoro.

Distrib. Widely spread in arctic and north temperate regions.

293. **Poa laxa**, Haenke; Thurber, Bot. Calif. II, p. 312; Ledeb. Fl. Ross. IV, p. 372; Hook. Fl. Bor.-Am. II, 246; Reg. & Til. Fl. Ajan. p. 126.

Hab. *Etorofu*, at Tsurubetsu.

Distrib. Arctic, alpine and northern Europe and North America; northern Asia in the Altai and Ochotsk regions of Siberia and in the Kuriles.

294. **Poa glumaris**, Trin. in Mém. Acad. Petersb. VI, 1, p. 379; Hook. Fl. Bor.-Am. II, p. 247; Max. Fl. Amur. p. 320; F. Schm. Fl. Sach. p. 200. *Glyceria glumaris*, Griseb. in Ledeb. Fl. Ross. IV, p. 392; Reg. & Til. Fl. Ajan. p. 126.

Hab. *Etorofu*, at Tsurubetsu.

Distrib. Northeastern coast of Yezo; Saghalin; northeastern Manchuria; eastern Siberia about the Ochotsk Sea; Kamtschatka; the Aleutian Islands, Alaska, and along the coasts of the Gulf of St. Lawrence.

295. **Glyceria festucaeformis**, Heynh.; Reichenb. Icon. Fl. Germ. I, p. 48, t. 152, f. 1613. *G. maritima*, Fries, var. *festucæformis*, Max. Prim. Fl. Amur. p. 320; F. Schm. Fl. Sach. p. 200. *Atropis maritima*, Griseb. in Ledeb. Fl. Ross. IV, p. 391 (in part). *Poa festucæformis*, Host, Gram. Austr. p. 3, t. 17; Hook. Fl. Bor.-Am. II. p. 245.

Hab. *Etorofu*, in the vicinity of Shana.

Distrib. In the littoral region of central Europe; in Manchuria, Saghalin, northern Yezo and northwestern America.

296. Festuca ovina, L.; Griseb. in Ledeb. Fl. Ross. IV, 350; Turcz. Fl. Baic.-Dah. II, 1, p. 339; Reg. & Til. Fl. Ajan. p. 125; Max. Fl. Amur. p. 318; F. Schm. Fl. Sach. p. 200; Fr. & Sav. Enum. II, p. 181.

Hab. Shikotan.

Distrib. Europe, northern Africa, northern Asia, Himalaya, Japan; North and South America; New Zealand and Australia.

The plant coincides very well with the descriptions of var. *violacea*, Gaud., as given by Grisebach and Maximowicz.

297. Festuca rubra, L.; Bong. Veg. Sitcha, p. 173; Hook. Fl. Bor.-Am. II, p. 250; Ledeb. Fl. Ross. IV, p. 352; F. Schm. Fl. Sach. p. 200; Miq. Prol. p. 170; Fr. & Sav. Enum. II, p. 181.

Hab. Etorofu, at Tsurubetsu.

Distrib. Arctic and northern temperate regions of Europe, Asia and North America.

298. Elymus mollis, Trin. in Spreng. Entd. II, p. 72; Bong. Veg. Sitcha, p. 174; Griseb. in Ledeb. Fl. Ross. IV, p. 332; Trautv. & Mey. Fl. Ochot. p. 102; Reg. & Til. Fl. Ajan. p. 125; Max. Prim. Fl. Amur. p. 317; F. Schm. Fl. Sach. p. 198. *E. arenarius* and *mollis*, Hook. Fl. Bor.-Am. II, p. 255. *E. arenarius*, Miq. Prol. p. 174.

Hab. Shikotan. Etorofu, in the vicinity of Shana.

The northeastern Asiatic and American plants have the glumes broad-lanceolate in shape, and short-acuminate, soft, silky-hairy on the back, with 3–5 (–7) prominent veins. The typical European *E. arenarius*, on the other hand, has a lanceolate long-acuminate setaceous glume, which is glabrous, except toward its tip; and the lateral veins are not so prominent as in the case of *E. mollis*. The character of the leaves is variable according to the nature of the locality and is not to be depended upon as a distinguishing character.

Distrib. Northern Japan; Saghalin; Manchuria; arctic and eastern Siberia; Kamtschatka; Alaska to Oregon, eastward across British America and the lake region to the Atlantic coast from northern New England to Greenland.

299. Bambusa kurilensis.—*Arundinaria kurilensis*, Rupr. in Bull. Petersb. VIII, p. 121; Steudel, Syn. Glum. p. 335; Ledeb. Fl. Ross. IV, p. 395; Munro, Monogr. Bamb. p. 17; F. Schm. Fl. Sach. p. 198 (var. *genuina*).

Hab. Urup! Etorofu, very common. According to Pallas this plant occurs on every island south of *Ketoi*.

While I was in Etorofu I searched carefully for the flowers and fruits of the bamboo so common in that island, but without any success. The original Kurile specimen, from which Ruprecht described very minutely its characters, was in fruit. The number of its stamens was not known to him. Under such circumstances, it was most natural for any one to place the plant under *Arundinaria*, as there is a remarkable resemblance between it and the plants of that genus.

Among my Yezo collection, I have two distinct *Bambusa*, one of which is *B. senanen-*

sis, Fr. & Sav., and the other, undoubtedly Ruprecht's species. In my specimens, which I consider to be identical with *A. kurilensis*, Rupr., the spikelets are generally in a simple raceme, oblong or obovate-oblong in outline, much flattened, 4–6 flowered, and 15–20 mm. in length; and they are appressed hairy and dull-ashy in color. The glumes are minute; the lower one is about 2 mm. long, and the upper about twice as long. The inferior palets are oval-oblong, acuminate, 8–12 mm. long; the superior is shorter and two-keeled. The stamens are six and included. The sheath of the leaves is not bearded at the throat. The branches and leaves are crowded and stunted in a fertile plant.

In the vicinity of Shana in Etorofu, the bamboo grows so thick and tall as to form almost impassable thickets. The different varieties (?) of *A. kurilensis*, Rupr., established by F. Schmidt, would most likely occur also in the Kurile Islands and in northern Japan and they require a most careful future study. Professor Maximowicz kindly informs me that the var. *spiculosa* of Schmidt has six stamens and is therefore a *Bambusa*. One of the original specimens of var. *paniculata*, F. Schm., in the Gray Herbarium, does not differ from *Bambusa senanensis*, Fr. & Sav.

CRYPTOGAMÆ.

LYCOPODIACEÆ.

300. Lycopodium clavatum, L.; Thunb. Fl. Jap. p. 341; Max. Prim. Fl. Amur. p. 335; F. Schm. Fl. Sach. p. 204; Fr. & Sav. Enum. II, p. 197.

Hab. *Etorofu*, at Shibetoro.

Distrib. Arctic and in the cooler regions of the north and south temperate zones.

301. Lycopodium annotinum, L.; Ledeb. Fl. Ross. IV, p. 497; Trautv. & Mey. Fl. Och. p. 106; Max. Prim. Fl. Amur. p. 335; F. Schm. Fl. Sach. p. 204; Matsumura, Cat. Pl. Herb. Univ. Tokio, p. 240.

Hab. *Etorofu*, at Shibetoro, growing with *L. clavatum*.

Distrib. Northern and middle Japan, Saghalin, Manchuria, Siberia, Himalaya, Europe from the arctic to the southern alpine districts; and in North America, from New Jersey to Colorado and Washington, and northward to Greenland and arctic Alaska.

302. Lycopodium japonicum, Thunb. Fl. Jap. p. 341; Max. Mél. Biol. VIII, p. 341; Fr. & Sav. Enum. II, p. 197. *L. dendroideum*, Michx. Fl. Bor.-Am. II, p. 282; Milde, Fil. Europ. p. 253; Miq. Prol. Fl. Jap. p. 348; Ledeb. Fl. Ross. IV, p. 498; Trautv. & Mey. Fl. Och. p. 107; Reg. Fl. Uss. p. 174; F. Schm. Fl. Sach. p. 204.

Hab. *Etorofu*, at Furubetsu and Shibetoro. *Kunajiri* (middle Nakamura).

Distrib. Middle and northern Japan, Saghalin, Manchuria, eastern Siberia about the Ochotsk sea, Kamtschatka, the Aleutian Islands, and from Alaska across British America and the lake region to the mountains of North Carolina.

303. Lycopodium complanatum, L.; Ledeb. Fl. Ross. IV, p. 499; Trautv. & Mey. Fl. Och. p. 107; Max. Prim. Fl. Amur. p. 335; F. Schm. Fl. Sach. p. 204; Fr. & Sav. Enum. II, p. 198.

Hab. *Etorofu*, at Nobori and Shibetoro.

Distrib. Widely distributed over the temperate and colder regions of the northern hemisphere and the alpine districts in the tropics.

304. Selaginella helvetica, Link! Fil. Hort. Berol. (1841), p. 159; Baker, Journ. of Bot. 1883, p. 46; Ledeb. Fl. Ross. IV, p. 501; Max. Fl. Amur. p. 336; Franchet, Pl. Dav. p. 344; Fr. & Sav. Enum. II, p. 199.

Hab. *Shikotan*, on moist rocks.

Distrib. Alpine regions of central Europe, Caucasus and Persia, northern China, Manchuria and northern and middle Japan.

EQUISETACEÆ.

305. Equisetum arvense, L.; Ledeb. Fl. Ross. IV, p. 486; Max. Fl. Amur. p. 333; F. Schm. Fl. Sach. p. 204; Fr. & Sav. Enum. II, p. 202.

Hab. *Kurile Islands!* (Max.). *Shumshu* (Akakabe).

Distrib. Arctic and north temperate regions and also in the Himalaya.

306. Equisetum limosum, L.; Milde, Fil. Eur. p. 227; Ledeb. Fl. Ross. IV, p. 489; Turcz. Fl. Baic.-Dah. II, p. 356; Reg. & Til. Fl. Ajan. p. 127; Max. Fl. Amur. p. 334.

Hab. *Kurile Islands!* (Max.).

Distrib. Arctic and northern temperate regions of Europe, Asia (northern and middle Japan) and North America.

307. Equisetum hyemale, L.; Led. Fl. Ross. IV, p. 490; Max. Fl. Amur. p. 334; F. Schm. Fl. Sach. p. 204; Fr. & Sav. Enum. II, p. 203.

Hab. *Etorofu*, at Furubetsu.

Distrib. Europe, northern Africa, northern and eastern Asia, and North America.

308. Equisetum variegatum, Schleich. Cat. Pl. Helv. (1807) p. 27; Ledeb. Fl. Ross. IV, p. 490; Ruprecht, Distrib. Crypt. Vasc. p. 26; Trautv. & Mey. Fl. Ochot. p. 106; Trautv. Fl. Terr. Tschuk. p. 40; F. Schm. Fl. Amg.-Bur. p. 73.

Hab. *Urup!* (Ruprecht).

Distrib. Europe, northern Africa, northern Asia and northern North America.

OPHIOGLOSSACEÆ.

309. Botrychium Lunaria, Swartz, Syn. Fil. p. 171; Rupr. Distrib. Crypt. Vasc. p. 33; Ledeb. Fl. Ross. IV, p. 504; Reg. & Til. Fl. Ajan. p. 128; Max. Fl. Amur. p. 336; F. Schm. Fl. Sach. p. 205.

Hab. First Island, Shumshu (Ruprecht). *Shikotan.*

Distrib. Europe, western and northern Asia, northern and middle Japan, Alaska and British America to Colorado and the northeastern States; also in Australia and Tasmania.

310. Botrychium ternatum, Swartz in Schrader's Journ. II, p. 111; Kunze, Pter. Jap. p. 491; Miq. Prol. Fl. Jap. p. 346; Fr. & Sav. Enum. II, p. 252; Milde, Fl. Eur. p. 199. *Osmunda ternata*, Thunb. Fl. Jap. p. 329, t. 32.

Hab. *Etorofu*, at Furubetsu.

Distrib. According to Milde, the plant is very widely distributed in various forms over northern and middle Europe; in North America from Newfoundland to Florida west to British Columbia and Mexico, the Aleutian Islands, Kamtschatka, Japan, the Sandwich Islands, Australia and New Zealand.

FILICES.

311. Polypodium vulgare, L.; Ledeb. Fl. Ross. IV, p. 508; Hook. & Baker, Syn. Fil. p. 334; A. Gray, Bot. Jap. p. 421; Mæx. Fl. Amur. p. 337; F. Schm. Fl. Sach. p. 205; Fr. & Sav. Enum. II, p. 244.

Hab. *Kurile Islands!* (Max.).

Distrib. Europe, northern and southern Africa, western and northern Asia, Manchuria, Saghalin, Japan and Kamtschatka; North America, from Sitka to New Mexico, eastward to New England and Canada.

312. Woodsia polystichoides, Eaton, Proc. Am. Acad. IV, p. 110; Miq. Prol. Fl. Jap. p. 343; Hook. & Baker, Syn. Fil. p. 48; F. Schm. Fl. Sach. p. 206; Fr. & Sav. Enum. II, p. 205; Franch. Pl. Dav. p. 347.

Hab. *Shikotan.*

Distrib. Japan, Saghalin, Manchuria, northern China and Mongolia.

313. Aspidium fragrans, Swartz, Syn. Fil. p. 51; Hook. Fl. Bor.-Am., II, p. 261; Trautv. & Mey. Fl. Och. p. 108. *Polystichum fragrans*, Ledeb. Fl. Ross., IV, p. 514; Max. Prim. Fl. Amur. p. 339; F. Schm. Fl. Sach. p. 206.

Hab. *Shikotan.*

Distrib. Throughout Siberia; Dahuria, Manchuria, Saghalin, Yezo, Kamtschatka to Alaska; arctic America to Iceland, and south to New England and Wisconsin.

314. Cystopteris fragilis, Bernh.; Rupr. Distrib. Crypt. Vasc. p. 39; Ledeb. Fl. Ross. IV, p. 516; Trautv. & Mey. Fl. Och. p. 108; Hook. Fl. Bor.-Am. II, p. 260; Max. Fl. Amur. p. 339; Reg. Fl. Uss. p. 177; F. Schm. Fl. Sach. p. 206; Franch. Pl. Dav. p. 347.

Hab. *Kurile Islands* (Rupr.).

Distrib. Arctic and northern and southern temperate regions; also in the mountains of the tropics. In Japan, so far as I am aware, Abashiri and Notoro Sands in northern Yezo seem to be the only localities for the plant, where I collected it in 1884.

315. Asplenium Filix-foemina, Bernh.; Ledeb. Fl. Ross. IV, p. 518; Hook. & Baker, Syn. Fil. p. 227; Max. Fl. Amur. p. 341; F. Schm. Fl. Sach. p. 206; Fr. & Sav. Enum. II, p. 226.

Hab. *Shikotan.*

Distrib. Widely distributed through Europe, Africa, Asia, and North and South America.

316. Asplenium spinulosum, Baker; Hook. & Baker, Syn. Fil. p. 225; Miq. Prol. Fl. Jap. p. 338; Fr. & Sav. Enum. II, p. 222. *Cystopteris spinulosa*, Max. Fl. Amur. p. 340. *Athyrium Hookerianum*, Moore, Ind. Fil. p. 185; Milde, Fil. Eur. p. 57 (in part); F. Schm. Fl. Sach. p. 206. *Asplenium subtriangulare*, Hook; Hook & Baker, l. c.

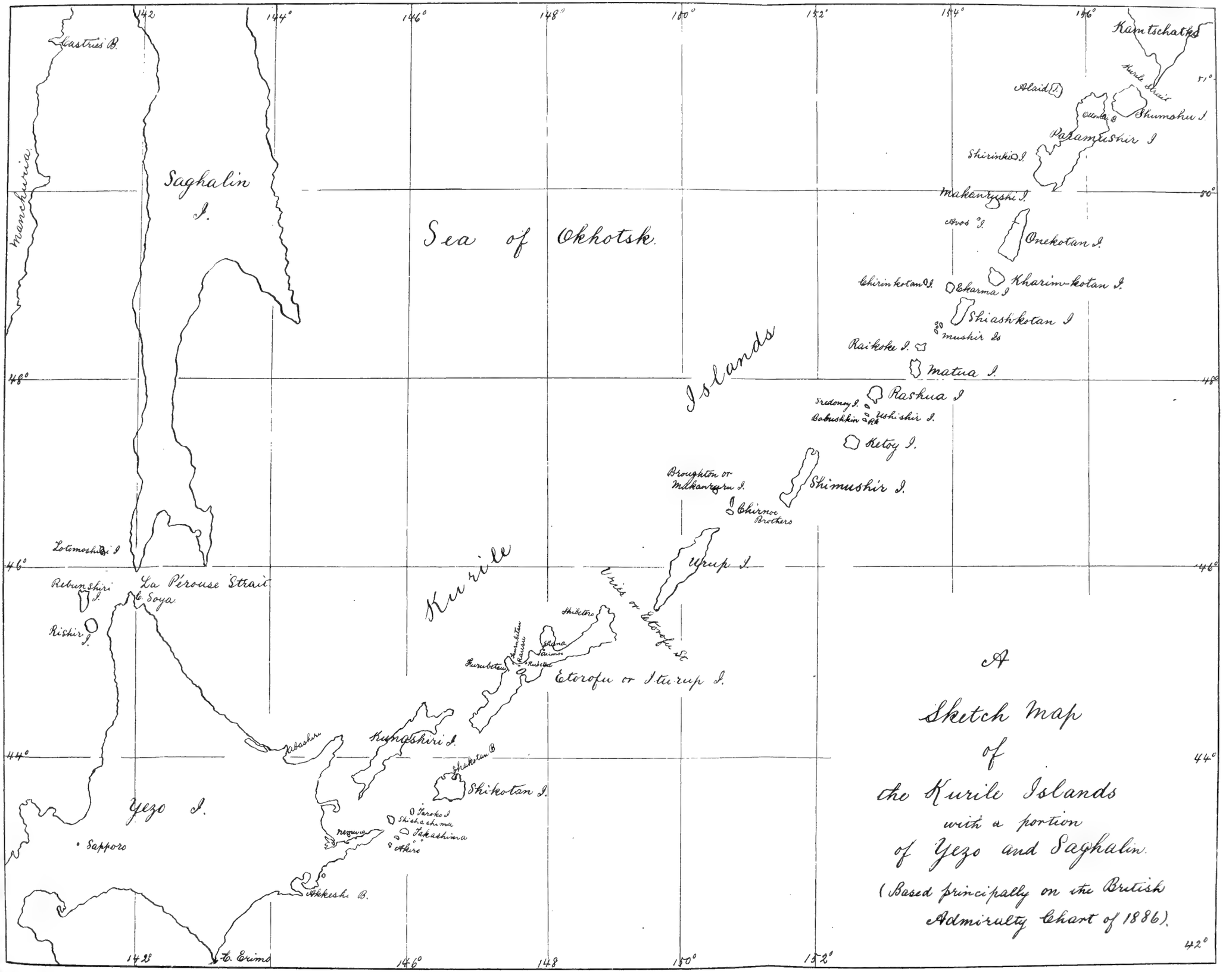
Hab. *Etorofu*, at Furubetsu and Shibetoro.

Distrib. Japan, Saghalin, Manchuria, Corea, China and the Himalaya.

317. Pteris aquilina, L.; Thunb. Fl. Jap. p. 332; F. Schm. Fl. Sach. p. 206; Fr. & Sav. Enum. II, p. 215.

Hab. *Etorofu*, at Furubetsu.

Distrib. Widely spread over a great part of the world.


142°
144°
146°
148°
150°
152°
154°
156°
Kamtschatka
Kurile Strait
51°
Alaid I.
Atlasova I.
Shumshu I.
Paramushir I.
Shirinkotan I.
Makantyshi I.
50°
Avos I.
Onekotan I.
Shirinkotan I.
Ekarma I.
Kharim-kotan I.
Shiashkotan I.
Musshir Is.
Raikoke I.
Matua I.
48°
Srednoy I.
Rashua I.
Broughton or Milkanrgun I.
Ushishir I.
Ketoy I.
Shimushir I.
Chirpoi Rocks
Lotomoshir I.
46°
Rebunshiri I.
La Pérouse Strait
C. Soya
Rishiri I.
Kurile
Urup I.
Uries or Eltorofu St.
Etorofu or Iturup I.
Yezo I.
Sapporo
Yakushi
Kunashiri I.
Shikotan I.
Shikotan B.
Tarako I.
Shisha-chama
Takashima
Akkeshi
Akkeshi B.
C. Erimo
A
Sketch map
of
the Kurile Islands
with a portion
of Yezo and Saghalin.
(Based principally on the British
Admiralty Chart of 1886).
42°